NEWS IN BRIEF

"We are understaffed by about seven people," said a council spokesman, "and because of this had to take on contract staff. Our permanent staff will share between £70,000 and £80,000 in bonus payments while the contract staff will cost us about £170,000.''

## Good start

INTRODUCED by Computer Ancillaries in April, the new Mael 5000 multi-terminal microcomputer from Insel of Italy has got off to an excellent start. winning UK orders worth £200,000 in the first two months of marketing.

#### Membrain order

AN ORDER for four of its MB 7700 range test systems has been placed with Membrain by the RAF for its Avionics Repair Centre near Chester. They will be used to test and diagnose a wide range of printed circuit boards automatically.

### **GEC** picks Trend

PAPER tape readers worth a total of £21,500 have been ordered from Trend Communications by GEC Computers. The readers are a mixture of 350 and 700 chos models and will be used with GEC 2050 and 4000 series computers.

## IBM hits at European govt procurement policies

urement policies and the principle of single tender contracts, has been voiced by top IBM fact that IBM builds the 370/138, 3031 and 3032 in France, while Cil-HB Level 66 nachines come from Phoenix or Scotland at xecutives in Paris and Vienna. M Jacques Lemonnier, the new managing director of IBM France has expressed concern at the slow growth in IBM's public sector present, although they are to be built in France

"This practice of guaranteeing orders to one company is a complete negation of the prin-ciples of free enterprise which the government Commenting on the French policy of favouring CII-HB for government business, Lemonnier is quoted in Le Monde as saying. "Today the technical judgments of public service users are perverted in order to obey the directives of the Ministry of Industry. Our engineers compat understand why the governhas been enunciating for several months," he

In Vienna, Kap Kassani, administrative general manager of IBM Europe, made a simi-lar point, although carefully avoiding mention ingineers connot understand why the government favours imported machines over

ferential treatment of so-called national DP manufacturers in procurement decisions for Pequipment.
"We think that these practices are de-

trimental to all parties concerned the user of the equipment as well as the protected sup-plier. We feel strongly that public procurement should award bids on the merits of the in-

"If government support is considered es-sential, we think it should be offered in the form of subsidies for R&D rather than through guaranteed contracts. The DP industry is technology-driven and future success is pos-sible only through technical leadership."

## 'God's gift to services industry'

MICROS are God's gift to the services industry. So declared CAP chairman Alex d'Agapeyeff speaking at the First World Computing Services Congress in Barcelona last week. He was hitting back at many delegates who had said that they were

worried about the spread of "The key to computing now and in the future is software." said d'Agapeyeff, pointing out the enormous business opportunities for software houses that there would be when

everyone had his own computer. Other speakers expressed the view that there would be plenty of demand for services which bureaux could provide, particularly in back-up and large-scale storage, while big discs. remained out of many cus-

#### Third World theme

tomers' price range.

THE use of computers in agricultural planning for Third World countries is the theme of next Wednesday's meeting of the BCS Specialist Group for developing countries. The meeting will be held at the London School of Economics, starting at 6pm.

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For NEW DESIGN 1978/79

to remember

P11/60's The number

## answer to **Extended Facility**

IBM's Extended Facility for the MVS operating system has been announced for delivery in October. Where IBM's Extended Facility is implemented in firmware (CW, May 4), Amdahl's product, called MVS/SE Assist. software.

The Extended Facility, which standard on the 3030 series and an option on the 370/168 and 158, enables users to run an enhanced version of MVS called MVS/SE, for Systems Exten-

Amdahl's MVS/SE Assist is the only major software product so far introduced by the company, and is claimed to improve throughput by about 12%, and runs on all 470 models.

IBM charges \$1,250 a month in the US, £951.30 in the UK, for MVS/SE, and Amdahl users will have to pay this rental fee to IBM in addition to the \$250 a month to Amdahl if they want to run MVS/SE on 470s.

The availability of the MVS/ SE Assist software raises the possibility that Amount could offer it to IBM 370/158 and 168 users as an alternative to the Extended Feature for MVS/SE To pay Amdahl \$250 a month looks an attractive alternative to paying 1BM between £9,480 and £47,000 for the Extended

Amdahl says that MVS/SE Assist has not been tested on a 158 or 168, and that there are no current plans to offer it to IBM

## DECWRITER III 180 C.P.S. TELEPRINTER NEW PRICES OFF - £1995 ★ Microprocessor controlled 'smart RAIR printing, for maximum throughput. \* JK FIFO input buffer with overflow \* 180 c p.s. printing at transmission speeds un to 4800 band

# A step closer to world viewdata

been brought a step nearer by the definition of an X75 protocol for interconnecting X25 packet-

switched networks.

An X25 network is the ogical medium for transmitting viewdata traffic, and the Post Office is considering use of the forthcoming public packetwitched network for its Prestel dewdata service.

Although not yet formally approved, the network is due to come into service late next year. Delay in seeking approval does not imply any hold-up in mplementation of the network.

Proposals from the industry for design of the network have been invited and are due next month, and the Post Office feels that until these have been studied, it is not possible to put up a realistically costed proposal

It is clear, however, that if the target date of late 1979 is to be met, existing packet-switching technology will have to be used. Among the possibilities are the CP-50 switches used on Trans-

pac, and Telenet Corp's Telenet Processor (CW, July 21, 1977). The French Transpac network, which was to have begun service this month, is now due to start in October, and is scheduled to offer service from an

£750

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ordaus Lid. Woodgates Read. East Bergholf. Colchester. Easts:

Euronet, which is being built by CEPT, the Conference on European Posts and Telecommunications, on behalf of the EEC, is due to begin service shortly afterwards.

Based on Transpac technology, Euronet includes two additional features. Where on Transpac, all connections are billed as reverse charge calls on the computer being called, Euronet has to bill terminal users, and therefore needs to include facilities to process user identity data. Also, since Euronet is a multi-national network using the facilities of several PTTs, there is a need to

switched service, the Post Office is planning a charge of not more the 0.05 pence per packet, with additional standing charges for collect and process data on traf-Racal 52% expansion—but

## Plessey dogged by misfortune

YEAR-END results from Racal fortune. In recent years, cutand Plessey indicate that, while Racal Electronics continues ahead, Plessey still has a long way to go to realise its full

Pre-tax profits at Racal for the year to March 31 were up 52% at \$249.8 million, on a turnover up 50% at £183.3 million. Data Communication, including the revitalised Racal-Milgo, was a major contributor, but tactical

military radio equipment led. While everything Racal touches seems to turn to gold,

backs in Post Office orders for telecommunications equipment have been a major setback. This time the Garrard turntable subsidiary turned in a £5.2 million loss which reduced a potential 20% improvement in pre-tax profits to a meagre 6.3%.

payments to each PTT.

Active consideration is being

given to making the UK public

packet-switched network the

medium over which Prestel

viewdata subscribers will com-

municate with the Prestel com-

puters. An experiment to link

Prestel terminals in the UK to

the West German Bildschirm-

text system is planned, and it is

hoped that the link can be made

via Euronet. The Bildschirmtext

system is based on Prestel soft-

ware and licences bought from

For the public packet-

the Post Office.

 Ferranti's figures, out this week, are expected to show a strong profit advance, and next week the company is to apply for listing of its shares on the Stock Exchange, following which the NEB will reduce its Plessey seems dogged by mis- stake from 62.5% to 60%.

## 'Draw more on govt research'

THE Parliamentary Under-Secretary of State at the Depart-ment of Industry, Lealle Huck-field, has called for industry to

ments.

Speaking jast Friday at the jounching of the first review of the Dol's six research establishments, thuckfield and "The technologies developed in the jaboratories piets be transferred to industry." by staff working hand in land at the labs or firms or by jaboratory specialists joining

Laboratory said that it was many projects. One example quoted was the Demos multi-processor computer being dave-loped with Scioon (see page 3).

Research Establishments Review 1978 is available free from the Department of Industry Library, Abell House, John Islip Street, Landon, SW1 Tel 01-21 | 8221



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Briefing

future in doubt

THE National Computing Cen-

tre's Threshold training scheme

for young people may not con-

tinue after May, 1979 when the

special measures under which

the Manpower Service Commis-

sion funds it, expire. Threshold

does not fit in with the MSC's

current Young Opportunities

Programme because its courses

are too long and at the wrong

The MSC pointed out that

after the first two years of

Threshold it was intended that

industry would take on the cost

of the scheme. The NCC has

submitted an amended syllabus

which is being considered by the

WITH orders from the Peking

University of Science and Tech-

nology for an 1100/11 and from

the Peking Document Service

broken into the Chinese market.

The orders total \$6 million and

follow an order to IBM for a

370/138 for'a turbo-fan plant

(CW, June 1). All three will need

THE highly successful seminar "IBM - the next five years"

held last March and organised

by infotech is to be run again

from September 11/13. The sub-

jects will be similar but most of

the speakers will be different,

The venue is the Greenwood

Theatre, London SEL The fee is

£310, with a 5% discount on bookings made before July 14.

RESULTS of market surveys

will allow Hitachi to decide how

and when to put its new home

microcomputer on the market,

First shown at the Tokyo Good

Living Show, last May, the sys-

tem is designed to interface

directly with a TV, and is in-tended for controlling central

heating systems, housekeeping budgeting and daily menu pre-paration.

Fight for control

AFTER two months of indecision, Northern Telecom of

Canada has decided to fight US

aerospace manufacturer

McDonnell Douglas for control of Data 100 of Minneapolis. The

Canadian firm, which already

has 31% of Data 100, is offering

\$19.25 per share for the remainder. McDonnell Douglas is bidding \$17.50 cach or \$20.50 in bonds, convertible some time.

IF permission is granted by the GLC, London Transport will soon be inviting tenders from

outside companies for the development of its £55 million

automatic fare collection system (CW: August 11: 1977). London

Transport hopes that the new system will reduce the £8 million

andual loss of revenue that

stems from fraud by users of the

underground reliways.

in the luture (CW, May 25).

Automatic fares

Home micro

Seminar repeat

for an 1100/12, Univac has |

academic level.

Into China

CoCom approval

**Threshold** 

Number 608

MAN PHILAD

A STRIKE took place this week

at the GEC Stoke, Coventry

plant in support of 16 operators

at the site who were sucked on

Monday, following four months

All ASEMS members at the

plant walked out after a mass

meeting on Tuesday morning,

expecting to return tomorrow

A meeting of AUEW/TASE

members late on Tuesday after-

noon was also expected to sup-

port a two-day walk-out,

although the result of this

meeting was not known at the

The company sacked the

operators after giving them the

option of reporting for work at 9.30 am on Monday, July 3, or being dismissed.

AN error in a major US survey

has seriously downgraded ICL's

position in a "league table" of

computer companies.
The survey, conducted by Arthur D. Little Inc. and

published in the June issue of

the American monthly publica-

ICL a turnover of \$233 million in

its 1977 financial year and bot-

The analyses and other compli-cated fourines needed for the financial management of business can be provided quickly and accu-rately by well designed computer systems. This week's special sec-tion deals with computers and the social with computers and the social with computers and the social with pages 11/13; Fine-tures on other pages include the adventures of a job hunter (page 4). A second look at the virtual inspiring (page 14). Sir Keite Joseph analysis some more ques-tions in Latters to the Editor (page)

tion Datamation, attributed to

time of going to press.

(Friday).

of disputes with the company.

Thursday, July 6, 1978

software front, programs on the 1 Mbyte, £380,000 2950 will be used to develop online systems under VME/K and some

Price 18p

## Model welcome for first 2950

when ICL nerivered the first 2950 on schedule to bra and swimwoor manufacturer Berlef (UK), model Juliette was at the company's Slough, Bucks, hend office to welcome the muchine. She was wearing one of the lotest Berlef developments, a swimsult called Secrets. On a different Portsmouth will be linked to the system by 7502 processors and direct links are also

ICL is now delivering 2950s at a rate of

two a week, with eight of the first 10 going

ned from the company's five other UK

# Halifax cash card threat to major banks

lenge the competitive position of the major clearing banks, the Hallfax Building Society is evaluating an IBM online cash dispenser at its head office, in

The society is the UK's largest, with 952,008 horrowers' accounts, over five million investor accounts and 360 pranches. The planned pilot trial is still in the development stage, but the society intends to start an in-house service for staff use in the autumn. If the results of this are satisfactory, it will consider a pilot service to customers in a few

(CW, Op Spot, March 30).

systems from ICL are now in

operation at several locations in the North of England, according to ICL's retail systems sales manager, Mike Politt. As yet unannounced as standard ICL

products, the systems operate

online with a back office com-

puter and provide facilities such

llon, which is over \$750 million

and close to the \$765 million

attributed to second place CII-

In the survey of US com-

panies, Texas Instruments and

Amdahl showed impressive

gains over the previous year's

· Full report, page 6.

Oh Spot Future of world services industry

Type Californ registrations and a Series St. Hone ( Blook E) Hone ( California E) Page ( Cold Figure ( Buredings))

Micro News. People in the Menys

Letters to the Relitor

the company said, "The opera-

tors did not furn up for work this

morning and so their contracts

with the company have been

The dispute is still an official

ASTMS matter: Last Friday a

meeting took place in Coventry

between the operators and Tim Webb of ASTMS who suggested

that they should agree to take

the matter to arbitration. They

February 24, and became an

official ASTMS matter on March

20, arose because the operators

are unhappy with the improved terms of pay offered by the company. The company offer

comprises an increase in shift allowance from 25% to 274%,

tom place in a list of seven non-

CII-HB, Hitachi, Siemens,

Nippon Electric and Nixdorf (in

The report does not reveal the

exchange rate used, but \$233

million would be, at most, about

£130 million. In fact, ICL's tur-

nover for the year ended Sep-tember 30, 1977, was £418 mil-

14) . . . There's enother view of the

future in Computeratyle 3000

(page 15) ... Tim Palmer reports from India (page 15).

Computeriden on privacy:
Podia os programinad
Programinas Notas

US companies, behind Fujitsu, at the current rate of exchange

APPOINTMENTS: PAGES 19-46

The dispute, which started on

refused.

US error relegates ICL in 'league table'

that order).

COMPUTER WEEKLY'S INSIDE NEWS

ALSO ....

is likely to be linked to a new kind of account bearing a very low rate of interest, but no firm decision has been taken

The clearing banks are already suf-fering from the fact that building societies are open on Saturday mornings when all the banks are closed, and the advent of cash dispensers from building societies could be another blow.

As soon as one society introduces dispensors, others are likely to follow and some societies, such as the Britanuia. have designed their networks from the ground up to be capable of adding cash dispensers if and when they are needed

(CW, June 3, 1976). GEC walk-out over sacked ops The Halifax is unique am nulding societies in that it niready differs a small-scale deposit cheque facility, mainly for staff members. However, the £2, £3 and £4 per week for special accounts are ulso availoperators, seplor operators and able to wives of staff members shift supervisors, respectively and to former stuff, and there

are about 10,000 such accounts altogether. It is on these accounts that the dispenser will

#### PoS preview be tested initially. The dispenser under trial e in North

SUPERMARKET point-of-sale

Turn to page 8

il**es.** H**e** invitos res

There's only o

way... ...uj

nanolalistard RK computer a rapidly drowing Company Thereason for this primple Syden are and the terminal DIDINGICA

. Aminopostot company EVALUATE BOOK & BOOK INSTALLED occorate, macty and basiny. unidential interestable and which is acceptable for expens

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EDITORIAL

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ISSN 0010-4787

## Data should become an open secret

become an all-pervading tool to pry into private lives has been heightened by a new piece of mass media "investigation" into the privacy issue.

Sunday Times "for the first time," it is claimed, there was a description of how the network of government databanks could be moving to a centralised "Big File" of 1984-style dimensions.

Although, right at the end, the article does admit that computers in themselves are not a threat to privacy, its mixture of pscudo-researched "in-depth facts" and journalistic anticomputer "shock-horror" provides a further unhelpful contribution to the vital debate on how society should face up to the impact of information tech-

in a society based on computers and other forms of information technology, it must be accepted that vast quantities of information on individuals will be gathered, and stored on computerised systems and that access will be feasible by anyone

HAVING provoked half of the

operators in the country — the

other half being presumably too

busy or disinterested to get in-

volved - Focus now turns its attention to the programming

it seems that Edward De Bono

world of programming. How-

ever, his customary lateral

viewpoint seems to have pre-

FOGUS

anyone desperate enough is issues. On the question of likely to be able to find that key. privacy there is only one answer Instead of trying to delude ourselves that we can produce laws and rules and systems that can protect privacy, there should be a revaluation of what

we mean by private. If society becomes more open and people become more open with each other, there will be fewer worries about "private"

information being accessed. At present, the greatest threat to personal privacy — from both State and commercial organisations - comes not from the Yet most people willingly give away the most important information for a "bugger" — the private telephone number and cut Up Machine-makers.

address — in the phone book. The complexity of modern industrial society can now only be last week, is likely to gather met with the assistance of com- momentum until the mass media puters to process the huge stops finding evil computers at volumes of information needed the root of everything, from

— to ensure that political power does not fall into the hands of people who want to invade privacy for evil reasons.

It is clear, for example, that police forces must be equipped with modern technology to fight crime. It is the duty of all those who believe in a free and orderly fewer secrets and therefore society to ensure that the police force always remains under the control of democratic processes

For it is only in the protection of liberty, free speech and the checks and balances of a democratic society that there can be computer but the electronic bug. any safeguard of personal

mooted by Professor Donald Michie in Guest Computerview to keep society working.

The danger of articles like that in the Sunday Times is that they age from her driving licence.

conventional procedures in

clude the buying in of ready made packages, thereby freeing

the team from re-inventing the

## Siemens introduces a fast hand-held scanner

duced by Siemens. The HL 5 can 'read 32 different OCR-A and OCR-B characters at up to 140

chps.
The characters can be generated by a line printor, matrix printer or ink jet printer, by label-ling equipment, plastic card imprinting or letterpress printing. Characters are read by passing

POINT-of-sale terminal systems the HL 5 scanner over the line in are one of the most important application areas for the HL 5 hand-held OCR scanner introduced by Slemens. The HL 5 can will linked to the scanner by a thin cable. Data can then be via a suitable interface.

The HL 5 looks like a serious competitor for the Recognition Equipment hand-hold OCR wand, which has been purchased in large volumes by PoS system suppliers like NCR.

## PO engineers' ban could hit telecoms users

COMPUTER users could be hit hard by an overtime ban by Post Office engineers, which started

last Friday.

This follows a stepping up of industrial action begun last October by the Post Office Engineering Union, in support of negotiations with the Post Office which have been under way for seven years, for a 35-

Installation of data lines and Post Office telecommunications equipment is likely to be increasingly delayed by the engin-

Companies moving offices or needing to expand their communications facilities are likely to be particularly badly affected, but repairs and maintenance will also be affected if the situation continues to deteriorate.

Since 1971 the engineers' union has been trying to negotiate a reduction to a 35hour week from the 40 hours now worked. Other staff in Telecommunications Division work 36 to 37 hours.

The Post Office says that engineers in other industries work a 40-hour week and it does not want to set a precedent in

According to the POEU, the only previous industrial action taken in its 95-year history was a one-day stoppage in 1969, and after seven years' negotiations on this issue members are a television outside broadcast feeling bitter.

that this action, coming within days of Lord McCarthy's investigation of the union case, is unacceptable to the Post Office. whenever Lord McCarthy has been home.

cards or:1800 B.P.I. magnetic tage.

asked by Industry Minister Eric Varley to establish how the Post Office's and the POEU's positions can be reconciled and to procure an agreement between leaders three times since the middle of June.

Many engineers, both union and non-union, work a 37% hour week, but the dividing line seems to come between those considered to be staff and those classed as manual engineers. The Confederation of

shipbuilding and Engineering Unions, which met at Eastbourne last week, passed a motion in favour of all member unions pursuing a 35-hour week. Last year, POEU action started in the form of refusal to commission new exchanges or install new types of equipment, and talks initiated in January this year broke down in May.

At-its annual conference at the beginning of June, POEU delegates decided that refusal to connect would additionally cover non-standard PABXs and underground line plant. This was a virtually unanimous decision, and the executive committee was also given the authority to call further industrial action.

The Post Office has responded by sending engineers home when they have refused to connect equipment, for example extra exchange facilities to handle unit. This resulted in the natioal overtime ban from last Friday, plus one-day token stoppages by engineers in the North of England and Scotland whenever men have been sent

## Mumps 'look-alike' on Series 1 and DG

He also rejected claims that work was neither NCR nor any other computer com-

being moved to the company's German plant at Augsburg. He said that staff reductions requirements will remain entirely stable for

were expected there and would probably be any type of product or for any particular

further technological simplification of their—up the capabilities of their Dundee operation

8100 family of small computers and the to produce computers and other advanced

Anderson, chairman of the company, has continued to decline.

microprocessors which drive them. The computer-based products.

told Scottish Nationalist MP Gordon Wilson.

result was that fewer parts would be needed

A US company closely involved years ago, has so far been rest- that both will continue to be sold in the development of the inter- ricted to Data General equipactive data management langu-age Mumps is to release similar In a software for IBM's Series I be- new system also operates on fore the end of the year. The Nova and Micro-Nova system, MIIS Standard, which already runs on Data General minis and micros, will also be available on Digital Equipment PDP hardware.

At the same time, the company — Medical Information will be released in November or Technology, of Cambridge, Massachusetts - has gained its by implementations for other first two direct European users PDP-11 models and the PDP-15. in the UK.

One of these is systems and Marcol has signed an agreement with Meditech permitting it to market MIIS in the UK.

MIIS, Meditech interpretive information system, first appeared in 1969 - the year that Meditech was formed. The founder of Meditech was a member of the team that had three years previously conceived and developed Mumps at the Massachusetts General

The Meditech software, for which the company claims about 300 users worldwide, is supported on a wide range of DEC and Data General

machines. An application based tem more attractive. This is on the latter is already running claimed to offer a number of at the US National Library advantages over DSM-11, both ı facilities and performance.

With the announcement of

MIIS Standard for the PDP-11,

however, some users may find

migration to the Meditech sys-

and supported.

"In such a climate of constant change,

Dundee was the sole supplier in Europe

The Series 1 version and the December. They will be followed aid Meditech.

In addition to the Eclipse, the

Mumps, which Meditech dedeveloping a system for the Penta Hotel in London based on PDP-1 computers. It was subsequently adopted by DEC as PDP-11 range.
The system, which in Europe

has approaching 300 users, last year achieved the rare distinction of recognition as an ANSI standard language — Joining Cobol, Fortran, and PL/1.

However, the standard represented a major step forward from the latest DEC Mumps release, Version 4B. Existing users were thus faced with a significant conversion task if they wished to migrate to DEC's implementation of Standard Munips, DSM-11.

There was for a while some machines. MIIS Standard, a uncortainty over the company's significantly enhanced version, commitment to supporting two which emerged about three versions, though DEC now says

## Information Privacy journal to be launched by IPC

A NEW bi-monthly journal called Information Privacy will be launched by IPC Science and Technology Press in September. It will cover the technical, legal, and social issues involved with computer-based information

systems and their use. The journal will deal with hardware and software considerations of security, the needs for and application of legal controls, international data flow, etc. Each issue will contain five international reviews of working groups, details of legisla-

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tion, conference reports, book reviews, and a calendar of

Managing editor, Gareth Jones, has issued a call for papers in any of the fields covered by Information Privacy.

Subscriptions will cost £35 a year, but until August 31 there is a special pre-launch offer of £30 for the first year, For more information, write to IPC Business Press (Sales & Distribution) Ltd, Road, Haywards Heath, Sussex RH16 3DH.

## NCR redundancies due to 'second electronic revolution'

their plant in Dundee were due to the He said that as the product became more of a variety of electronic data terminals plus "second electronic revolution" William S. technically advanced, the labour content a new Dundee-designed and developed intomated self-service banking terminal. Wilson, who is MP for Dundee East, said he was disappointed that Anderson had not been able to give any pledge about the labour requirements at the factories, and had not accepted his suggestion there was a

need to steer additional electronics work to Anderson said the reasons included It was, however, NCR's intention to build the city. He said it would be wise and cautious for Dundee to look to other ways of solving its job problems, either by pressing for the NEB's new microelectronics plant, which for the fabrication and assembly of the of the 8200 family of computers, as well as might be sited in the North East of England, product, and that meant lower labour con- the larger NCR 8400 and 8500 Criterion or for additional industrial investment



switch of work to Augeburg

ANDERSON .... claims of

## Tories plan five-year training for engineers

A STUDY group set up by the should change."
The committee that a new five-year classes of engineers. training programme for engineers be introduced, together with a two-tier professional structure, in order to improve standards. Dr Keith Hampson, MP for

Ripon and instigator of the study, sold "Britain's engineers are in danger of being the worst trained in the world, and might even be putting lives at risk. This investigation shows that not only have standards to be relead by the these than the standards to be relead by: lards to be rolsed but that the whole nature of the training

Service engineers could go broke if they relied on Texas Instruments 743KSR data

terminals. Specify them for your customers, and

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they'll very probably see a service engineer no

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great Silent 700° tradition - extremely quiet.

full ASCII keyboard and a receive-only version.

the 743KSR very compact and reliable and - in the

Features with special OEM appeal include a

use. And the 743KSR is one of the current

,more than once a year.

classes of engineers, chartered engineers and technician engineers. To achieve chartered status a student would take a five-year sandwich course with the academic and industrial parts much more highly integrated than at present. This would have to be followed by two years of super-The new Engineering Train

Council would be set up, possibly under the segis of the Council of Engineering Institutions.

THE modularity and flexibility of the ICL 2900 line is underline by the Central Computer Ager cy's new 2976 at Norwich. Th machine was put together from a new 2980 order code processo and the storage subsysten lpherals from the 2970 whic lhe CCA ran at ICL's Brackne offices until last September. The now dismantled 2970 wa

used to provide a remote in entry program testing service t government departments. This service is now provide

about five months the CCA use the night shift on the 2980 at th Ministry of Defence Burea West establishment at Devizes The 2976 supports ICL 750

RJE terminals at severe government departments, in cluding the Department of th Environment at Hastings, th CCA in London, the Departmen of National Savings at Durhan and one Ministry of Defence es tablishment. There are also tw 7503s at the CCA in Norwich.

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more than one solution to a pro-blem — ones which can be de-veloped in mere 10 minutes of highly charged lateral thinking. Encouraging the programming of "lateral thinking" fame has also been contemplating the

sented an unrealistic picture. To suggest, for instance (CW, June many DPMs, 15) that too much emphasis is placed on printing legible characters on coding forms, is a theory which deserves a horizontal boot. DP managements are well

aware of the general lack of productivity achieved by their a pain in the main core.

program teams. It is unfortunately a fact of installation life that only 25% of programmers' time is spent actively program-ming. Much of it is taken up with rewriting, in legible format, sundry coding sheets or de-ciphering them for the benefit of the input team.

Evaluating productivity in the region of programming is not as basic as keeping tabs on operators. Should the operations team pause for a coffee break - not that this is a standard routine the fact is logged and duly documented. Should, however, for the delights of the coffee machine - or the latest punch girl - the fact will not go on file. Likewise, if the programmer

powers down early, no one takes much notice. The DPM, on dis-

covering an empty office; blandly assumes that the entire

team is out on user location or at

a manufacturers' briefing. His tolerance, however, does not

De Bono suggests that a broader view of DP problems should be taken. There is often team to discover alternative solutions is not necessarily one which will commend itself to

In any case, most operators are happy masterminding their equipment responsibilities without having to indulge in bouts of

Meanwhile, methods of improving programmer produc-tivity remain high on many even "top down". The more

advanced level applications are

basic application wheel. Pro-viding the programming team with back-up support in the shape of a program libration is a well known method of improving productivity. One other neglected area is the basic improvement of source codes. A CPU saving in excess of 30% can often be achieved from a concentrated dose of diligent

reprogramming, If operators are the forgotten race then the programmer is the taken-for-granted equivalent. lateral thinking. Inefficient pro-Programmers are well conditioned to being ignored when all is going well. But they are first in the firing line following a rash of grams they can deal with, but

faulty operating systems or a new generation of software bugs. It is certainly the case that programmers, unlike their ana-DPM's thinking pads. There is no time for thinking laterally or

## INTERRUPT years

ago. 0000 COMPUTER WEEKLY JULY 4, 1968

Sir John Wall, daputy chairman of the Post Office Board was named as new chairman of ICL. Britain's first institute of Cybernetics was planned for Branel University. A sailing boat following a bourse programmed on an English Electric KDFB whon the Observer singe-handed transatiantic race. The Sil Cybianned a message switching and control system which would automate many of the technical sepects of broadcasting. Concern that the GPO's plant for a future data transmission metwork might prove insidequate led to the formation of an ad hoc ginger group, the Real Time Group. Plana for a South West Universities compute for all inegital transmission of the transmission of the computer of the Real Time Group.

#### vst colleagues, soldom get their views aired.

found that the mechanism which automatically inserted library routines at the head of the program was misbehaving. The routines were being daclared, but attempts to refer to

them in the program were faulted. Disquieted, he telephoned the person who supplied the com-piler. It transpired that the file containing the library declarations was typed in lower case, itons was typed in lower case, letters, but the college teletypes only had upper case, Unfortunitately, the compiler accepted upper and lower case identifiers, but treated them as distinct entitles.

Consequently, lower case routine names had been declared, but as the references were o upper case names the comller wouldn't match them. Morali Check the syldence

before you press your case.

This week's £5 interrupt prize goes

Greg Michaelson of Napler College

of Commerce and Technology, Edin-

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# MICHIE'S PRIVATEVIEW A telegram to Leonid Brezhnev

THE 30-year-old Soviet Scienist Anatoly Scharansky is due shortly to stand trial in Moscow on a change of treason. Before his arrest he was an active member of the Helsinki Agreement monitoring group. his group investigates the degree of compliance by the soviet authorities with the Agreement's provisions on uncu rights, and takes particular interest in the case of Soviet Jews wishing to emigrate to Israel. From time to time the group circulate reports of their findings. It is this to which the Soviet government takes special ex-

Scharansky is Jewish. He is also a computer scientist. Last summer the ACM leadership protested publicly against his irrest (CW, August 18, 1977). Unfortunately these protests. instead of urging computer scientists worldwide to direct appeals to the Soviet political and legal authorities, called on hem to rupture relations with heir Russian scientific opposite numbers, to boycott conferences on Russian soil, to refuse to accept Russian scien-

ific visitors, and so on. This recommendation in my pinion was and is a tragic error. If the aim is to bring ncouragment to Soviet scientats concerned about uman rights, then this way of showing displeasure with the actions of their government is seriously counter-productive. As a way of influencing those actions it is at best totally in-

There is doubtless some idea

Soviet scientists into them - scientific establishment in the selves taking the matter up early 1920s. Why was he denied with their own governmental authorities, and that Brezhnev is more likely to take note of in people's minds with this indirect pathway than he memories of the Kaiser's would of more direct pressures. atrocities.

ture of suspects in Ireland,

were to break off their rela-

tions with the Royal Society. The Fellows of the Society, and

other British scientists, would

be inclined to feel that foreign

scientists should either mind

their own business or should

ddress their protests to the

Home Secretary, the Prime

Minister, or other relevant

Why do our scientists and

computer people imagine that

these particular principles

work any differently in the

reverse direction? The

assumption that they do is

contradicted by numerous

conversations I have had over

the years with Russians of

low scientists and technolog-

ists, however well motivated,

The desire to hit out at fel-

every hue in the spectrum.

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person or government office

On the basis of numerous visits to various parts of the Soviet Union over the past 22 years, during which period I have also played host to a suc- have on occasion pointed out cession of Soviet visitors to my own laboratory. I can assert that such an idea is misconcolleague, my brother. ceived. It would after all be absurd if, shall we say, some Soviet academicians, upset at recent reports of British tor-

identification either with this narrow technical concern, or with the broader community which binds scholars, scientists and engineers everywhere into a single fraternity, to add their signatures to mine on the following telegram to Leonid Brezhnev, and/or to send their own message (preferably

ing trial of Anatoly Sch invited to attend the judicia

Honald Taline Editor's note. Readers wishing saddens and alarms me. I de-tect here seeds of that mindless to add their names to the above telegram should write a persohysteria which ends up in-nally signed letter to the Ediing the very cause that it tor. Computer Weekly, Dorset

**PROGRAMMER** 

NOTES

German, and hence associated

Anatoly Scharansky did hi Master's thesis on the comnuter representation of ches nd-game knowledge. As I to Soviet artificial intelligence scientists, he is therefore my

In invite all who feel ar

Brezhnev, Kremlin, Red Square, Moscow, USSR.—We British computer professionals express our concern at the forransky and believe advance of science and human culture to be inseparable from equitable and open judicial practice. We accordingly urge that observers from the international scientific

On-Line Alpha provides operators with flexible facilities for master file searching. A search can, for example, be in-itiated with as little as last name only - or part of the last name

— and the system will return all potential matches. purports to champion. Let us House, Stamford Street, Lon-Because it uses automatic n mind that such measures not forget the cold-shouldering don SEI 9LU, including a of Einstein by the British verifiable address. phonetic encoding, the system is tolerant of spelling mistakes: a search on the basis of an incom-

'Pursue patents in Congress'—court

On the other hand, where

complete information is avail-

able, secondary identifiers such

as date of birth can be used to

make an immediate "hit" very

online mode, On-Line Alpha can

be implemented either as a

stand-alone system or as a sub-

sidiary index to existing master

In the latter mode, records

would contain a logical pointer into the main application files.

The system provides user exits

through which such linked

porting QISAM, BISAM, BIDAM, BSAM, and QSAM, the software

is said to execute in a 32K parti-

tion under any TP monitor. It

will sell in the UK for £21,000

Lonsdale is the UK subsidiary

providing a 20-year licence.

Written in assembler and sup-

records can be accessed.

Updatable both in batch and

A JUDGE in the US Supreme Court has indicated such manufacturing processes as petroleum that proponents of software patentability should refining. pursue the matter with Congress rather than in

SOFTWARE FILE-1

Dale Flook case (Software File, May 18). Flook's system, the subject of the case, is an The decision rested on a long-established are

Store, retrieve system

data is launched in UK

NEWLY-INTRODUCED in the

UK is a system for storing and

retrieving alphabetically in-

dexed data. The On-Line Alpha

System, which operates under all versions of IBM's DOS and

OS, originates from Insurance

Systems of America Inc and is

available here from Lonsdale

The software is particularly

well suited to applications which

need to access large files or

databases using an individual's

name as the search key. Typical users in this mode

would include banks, insurance

companies, public utilities, and

local government departments.

which face the problem of

having to make inquiries when

the customer or account holder

does not know his customer or

account number

for alphabetically indexed

Voting by six to three, the Supreme Court hold he courts. The recommendation was made after—that the disputed program could not be patented the Court had ruled against patentability in the under current patent law since its only novel - feature was a mathematical formula.

improved method for monitoring permissible cedent that abstract intellectual principles, such as levels of heat, pressure, and other variables during laws of nature or mathematical algorithms, are

not patentable. Associate Justice John Paul Stevens noted that a process did not become unpatentable simply formula. He insisted, however, that the process itself must be

In this case, he said, the com puter program at Issue was not an "inventive application" because it employed wellestablished technology with the mathematical formula as its only new feature.

Justice Stevens went on to emphasise that the decision should not be interpreted as es tablishing that putent protection for software was undesirable The appropriate scope for suc protection was, however, a policy decision best left to Con-

The Supreme Court's majorit decision overturned the pre vious finding of the US Court o Customs and Patent Appeals This court had ruled that the subject matter of the program was patentable.

The dissenting judges, com planning that the decision struck a damaging blow at basic pri ciples of patent law, said that criteria of novelty and inventiveness had been introduced incorrectly.

of SDI Associates of Toronto, a The degree of innovation major Canadian computer sershould be considered only when vices company. The company was formally incorporated in the deciding whether to actually boue a patent, they said UK carlier this year, following Although a patent might well be four years' operation as an SDI ultimately denied. Flook's process in their view clearly met the standards set for subject matter patentability under the current

## The company is based at Prudential House, Wellesley Road, Croydon, Tel: 01-081-3021 plete key will also return most Bug-free library can give

branch office.

LAST week's Programmer Notes contained the start of a Do-It-Yourself input/outputlibrary article. This episode con-tinues the OPEN statement foris already OPEN, 2 file does not exist, 3 conflict of READY Adiffer mat, so it is best read in con-

junction with last week's Notes. It is usually possible to create files with varied READ-WRITE be broadly divided into READ, case returns the key. attributes. Programmers should be encouraged to explore the possibilities of limited READ would be needed for sequential access and a slightly more combeting NONE of ATT are the sequential access and a slightly more complex version for random files.

Expiry dates should only be present when a new file is being created and should conform to installation requirements. Possible extensions to the OPEN and CLOSE routines in-

clude parameters corresponding

greater control of 1/0 character in the password, I file standard, so the key should be status flag.

WRITE privileges etc. Record handling routines can

WRITE, SEARCH or POSITION and DELETE. Simplistic versions of the argument lists But keyed files are becoming more popular and it is on these that Programmer Notes will concentrate.

A suggested READ statement would have the format READ (unit number, key, buffer, length of record, status/direction). The clude parameters corresponding to the unit number and status flag. This type of command would use any defaults or previously introduced file attributes, but remember in sufficient information is a valid error message following a system request in those conditions:

A DESTROY file routine could be incorporated as a secondary entry point to the CLOSE ROUTINE.

It is a good idea to split the status-flag value into several categories, to make for faster analysis, eg 103 could mean an illegal third character in the file-name; 204 an illegal fourth of record, status/direction). The no destruction is self-explanatory in the "key," argument needs careful implementation. To in-passific on a key of the form the sist on a key of ADI is indirected or the following a system.

"2033CIFIF3" meaning a three file byte key of ADI is indirected or the fourtine is required for the fourtine is ter may be overcome by performing an implicit OPEN.

The optional direction parameter would be used with the sequential READ on a keyed of file and has the values forwards.

same as READ, only a key must always be supplied and the "overwrite" parameter can be used. Overwrite is a good security measure, if an identical key to the one being written exists, the routine either automatically overwrites the record, or reports the fact via the

The record POSITION and A different form of the READ DELETE routines are simpler. statement handles sequential needing only the unit number reads on a keyed file and in this key and status flag. Imple-Buffer and length are self ex-

menters should delve into their system file handling to see planatory, although it is good whether a read of a non-existent practice to encourage program- key will cause the next read to mers to use an explicit buffer be made at the key logically area. Although length can be a after the non-existent key or at for more bytes than are an arbitrary point. physically present, the parameter should be returned

A bug-free and efficient implementation of the library. with the actual value, after the suitably annotated and en hanced, will offer applications Status could include: nonprogrammers more control over existent major/minor keys; loss of data; end-of-file; null file; file their input and output and for the end user an easier means of not open/non-existent. The latcommunication with the dreaded computer.

## Puzzler

file and has the values forwards or backwards, Forwards is also THIS week's alphametic is not only "true" but also the widest The WRITE routine is the ever Seventy-seven is of course an odd number, and all ten digits are involved. See Page 45 for SEVENTYTHREE

SEVENTYSEVEN

## Accounting packs for TA 1000s launched

A RANGE of applications packages has been and Stock. Claimed to feature ease and . All the packages are designed for opera-

The second package, Panacea, offers

Sales ledger processing, invoice producthe purchase ledger, and cash. The suite is systems for VDU use and also plans to offer

## **Multi-tasking** capability

SOFT BITS

A NEED to process more than tion, and stock recording are combined in an integrated system called Assist — Adler capable of handling hourly, weekly and ment, and production costing and control one task at a time is said by Allied Industrial Services to System for Sales ledger invoice production monthly payrolls. have been the key factor in its decision to replace Informatic's small Minicomin TP monitor World rights for with the Westinghouse system,

The company, a division of the Initiz! Services Group, has installed Westi on its 256K IBM 360/40 in Bradford. Westi, which 360/40 in Bradford. Westi, which now has 40 European users and 400 worldwide, offers a multi-tasking capability in contrast to Minicomm's single-tasking Minicomm's single-tasking

A SOFTWARE development laboratory, employing about 50 staff, has been set up in Califor-nia by Mohawk Data Sciences Corp. It will concentrate on developing software enhancements for the MDS Series 21.

A RELEASE date of July for the VME/K Basic compiler was confirmed at the last meeting of the VME/K user group. The software was developed by Kent University under contract from

A TALK on Concurrent Pasca and its use in the NPL's multi-Microprocessor Demos project (CW, June 29) will be given at the next meeting of the BCS Software Engineering group. An all-day meeting to be held on July 13 at Birkbeck College, it will also include discussions o system programming in Pascal-Plus and the use of the MicroSim development system.

LATEST customer for Time Utilising Business Systems' payroll package is Contact Lenses (Manufacturing) Ltd of London. The company runs the software on a DEC Datasystem 310.

CONTRACTS worth £4 million have been received for RTZ Computer Services' fixed asset system Fascia since the release of the Mark II version. Now incorporating facilities for inflation accounting according to the Hyde guidelines, the system has over 60 users.

EXTENSIONS to the user interface are the major feature of the latest version of ADR's Roscoe marketed in the UK by CAP-CPP. Enhancements include an extended 3270 screen handler, offering key-controlled browsing, and a complementary screen position pointer which dispenses with the need for absolute sequence numbers during file maintenance.

TWO new modules have been added by Safe Computing to its SaFeS production control package for ICL System 10 users (CW, October 6, 1977). The modules, for Extended Requirements Planning and Work in Progress, provide the facility for more efficient control of material and resources.

## pany in Kuwait has acquired

of sales ledger, purchase ledger, and payroll. facilities for the control and management of

Developed in the UK, the software library, ting functions.

Absal, provides initial packages in the areas

worldwide rights outside North America to the only Basic Interdominantly commercial, he preter so far developed for IBM's noted, but the educational sector had shown considerable The software, Basic/1, was interest and already had at least developed by Grand Computing Enterprises of Birmingham, Alabama (Software File, Febru-

Basic/I, which includes its own operating system, is an exary 16) and was first released tended version of the language, last August. The company has said to be roughly comparable with that provided by IBM on just completed an agreement assigning all rights to Gulf 5100 systems. A shareable inter-Computing Systems, in Kuwait, preter, it can support up to and Data Systems Inc. in welve concurrent users on a A spokesman for DSI said that

The software is currently available in three versions; a single-user version supporting both disc and diskette; and a paign. Future development of the system would be conducted ting both media. multi-user version, also suppor-

priced at once-off charges of \$1800, \$2100, and \$3800 respec-

Significant enhancements announced by the new owners for release in September include an indexed sequential access method and a multi-field sort utility. The ISAM feature will allow multiple indexes, keyed or sequential access, and index reorganisation with or without record reorganisation.

Also under development is relocation translator support, which will permit the use of additional memory up to the Series I maximum of 256K. This will enable the software to provide effective support for a much larger number of simultaneous users, the DSI spokesman noted. Unrelated to Gulf Oil, Gulf

Computing Systems can be contacted at PO Box 25125, Safat,

Kuwait, Arabian Gulf.

**DS 990s** from Texas

alpha-numeric console keyboard

AN RPG II compiler has been pleased by Texas Instrument for its new DS 990 family of commercial systems, based on the Ti 990/10 processor (CVV,

May 4).

The software is said to be closely compatible with IBM System 3 RPG II and includes a tility for transferring RPG II source programs and files from System 3 and System 32 diskttes to DS 990 disc files.

The Ti package also offers a number of program develop-ment alds. Chief amongst these are a screen-oriented text edi tor, for program source manipu-lation, and a run-time trace op-

## released by Adler Business Systems for the - flexibility of operation, the software also - tion on the standard TA 1000 configuration widely installed TA 1000 business system, includes ancillary and management report including two floppy disc drives and one The company is at present developing

IMSL's

DEMAND from existing subscribers has prompted International Mathematical and Statistical Libraries Inc to implement its Fortran subroutine horary for Digital Equipment's PDP-11 minicomputer. Consisting of nearly 400 func-

tion sub-programs in the areas the library was validated under DEC's Fortran IV and Fortran IV Plus compilers. Typical memory requirements are said to be 32K. The PDP-11 version is the

second IMSL implementation for a minicomputer. Last year, the library was made available for the Data General Eclipse series (CW, October 6, 1977). IMSL's UK rival, the Numeri-

cal Algorithms Group, has also recently implemented its library on the PDP-11, as well as on a number of other minicomputers

Available from IMSL headquarters in Houston, Texas the software carries an annual subscription charge of \$1,220.

## Prosper update from Dataskil

THE latest release of ICL Dataskil's modelling system Prosper contains new facilities as well as extending support to online users on ICL 1900, 3903/ 2904, and 2900 DME machines. Prosper + in particular con-

centrates on the requirements of financial planners, with tools in the areas of budgeting, forecasting, and costing. VDU+ provides development aids for the online user, designed to speed the construction of models.

## Chinks in ICL's TP deal found for Cortez

THE marketing agreement between ICL and Telecomputing, which gave the former worldwide rights to TPS (Software File, cluded from the market other software houses with TP monitors for 2903/2904 systems. The latest evidence comes

Denver. Colorado.

his firm had taken over support

of GCE's existing customers in

the US, numbering around 15,

and was in the process of

launching a US marketing cam-

from Zeus-Hermes, which has zenland) to cover marketing of Cortez-Plus and Cadiz in New Zenland and Fiji. Effective from March 1, the agreement has already resulted in the sale of Cortez-Plus to an ICL customer is

Mick Punter, managing direc-tor of Zeus-Hermes, said that despite the agreement with Telecomputing, TPS by no means appeared to have been adopted as in exclusive standard.
"We still prepare joint propo-

both in Europe and the UK, are continuing to offer Cortez. With the exception of Australia, where ICL could not take Cortez officially, we have not suffered at all from the company's agreement to market TPS." Cortez, which also runs on

1900 and 2900 DME machines, originated from a software house in Australia (CW, December 11, 1975) but has been significantly enhanced by Zeue-Hermes, notably with the introduction of multi-threading (CW, September

Cadiz, an entry-level TP package for 2903/2904 users, was introduced by the company ear-lier this year (Software File, February 23) as a low-cost eltern-

## Routing, scheduling system

A VEHICLE routing and scheduling package said to overcome the limitations on daily types, and to prohibit the allocation of incompatible loads. The system can also handle trip planning usually imposed by other similar systems has been developed by Deltran Analysis, of Cheadle Hulme, Cheshire. stalled by CDC Data Services.

specific goods to set vehicle rently being extended.

priority goods, limited access

Designed to enable cost minl Trucks, it has been in- imisation according to usersupplied parameters, the soft-Features of the package in- ware at the moment caters for clude the ability to model road urban and interurban networks type and congestion, to limit in the UK and Eire, but is cur-

## Time-saving in Panyalet update

security features. Version 10 also extends support a new command to display all of part of a member

Heading the list of enhancements is the "I" command, which enables sections of code to be interchanged between Panvalet library members. The programmer can thus move routines without having to punch them out.

new facility for selective backup or transfer of ++WRITE, ++FORMAT, and ++OPTION members. Using this facility, a protection file of commands.

THE latest release of Panyalet, Pansophic's source specific members can be constructed without program management system for IBM 360/370 having to keypunch each required member name users, includes a number of new time-saving and For TSO and CMS users, enhancements include to 3350 DASD units, in both DOS and OS versions of the software.

without having to first retrieve the member to a sequential data set. Batch and TSO sites also benefit from an optional security mechanism which prevents the renaming of production data

Other enhancements in Version 10 include the option for automatic RPG, Autocoder and JCL level stamping and a new column 72 code giving Also designed to save the operators' time is a the ability to override default options for the

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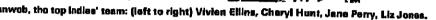
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The winning men's team from the Midland Bank. (Left to right, back row) Rob Adams, Dave Wareham, Grain





## Rain didn't stop play

FE a cold and rainy day there was plenty of enthusiasm at the North West Heat of the Computastars competition, held at the Kirkby Sports Centre, Liverpool. The unseasonable weather cut the entry so that it was the smallest so far in the series with 11 men's teams and four women's teams taking part. Winner of the men's individual title was Paul Bickerton of the Inland Revenue, while the women's title was shared by Jane Perry of Manchester and North Western Electricity Board, Manweb,



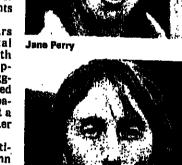
pares to put the shot which won second men's event and (bélow) Cherril Garner

Competition for the men's team title was close with Midland Bank scoring 1151/2 points to win from Manweb with 1091/2. Third was Inland Revenue with 106. Top women's team was Manweb, with Littlewoods second and Inland Revenue

The final heat in the competition, that for the Midlands, takes place next Sunday, July 9, in Birmingham at the Alexander Stadium, Perry Bar. The events are due to start at noon.

The grand Computastars finals will be at the Crystal Jane Perry Palace sports complex, south London, on Saturday, September 30. This will be the biggest sports event ever organised for computer people and prepa-rations are in hand to make it a great day out. Watch Computer Weekly for details.

The Computastars competition has been organised by John Goldsmith Computer Services with the support of Computer Weekly. Anyone who would like to assist at the Birmingham heat or at the finals should contact



Jenny Baines



## 

## Multiple appointments made at Compeda

TEN appointments have been announced by NRDC subsidiary Comeda, which markets high technoogy software systems for enineering and CAD applications. Technical manager responsible for

industrial and mechanical en-gineering is John Smith, formerly with the multinational SKF Lugineering in the Netherlands, as enior engineer for manufacturing

Mike Bean, previously chief in-dustrial engineer with Taylor Instruments, joins John Smith's team as a salesman, and John Prest hecomes a salesman for the Plant Design Management System, PDMS. Until recently he was commercial/ sales manager with Warren Point.

Formerly a project engineer with AERE, Harwell, where he was responsible for introducing and implementing PDMS, Cliris Chaney joins Compeda as a development gineer on the system. Project manager of Compeda's

Gaelic design system is Michael Watts, who as director of synergy logistics at Synergy Dynamics was in charge of software maintenance. levelopment and testing. John Cookson, previously a marketing executive with Ferranti Cetec Graphics, has become senior technical sales consultant for Gaelic.

Recently appointed systems programmers are: Ken Loosemore, who as a research associate at Edinburgh University worked with Gaeile and designed one of Britain's first computer-controlled digital music synthesisers; Alex Tweodly, from Marconi Space and Defence Systems where he was a system and user support programmer; and Andy Turner, previously a senior analyst/ programmer with the Institution of Electrical Engineers.

After four years as principal au-thor with Plessey Radar, Nair Vasudevan joins Compeda as prinioal technical writer.

Jim Coe has joined AMI Microsystems as manager of the memory product marketing department, rom intel, where he was manager of international microcomputer mar-

Arnold Cender has joined Logabax as a systems analyst after holding similar positions with PDM Computer Services and Adler.

David Dave has become managing director of Atlantic Lensing Ltd. Formerly he was UK country manager for Rel UK.

Alan Bates, formerly deputy group managing director of Hoskyns Group, has become operations director of Audits of Great Britain

Peter Bell has left ICL, where he was regional manager, field on-gineering, for Central London, to join Systime as UK field operations

David Jardine has joined CMC as a senior systems analyst from Lucas Aerospace where he was a systems section leader. Barbara Butler also joins CMC as a senior systems anayst; most recently she held the same ob with Rank Xerox.

David O'Toole, a founder member and recently regional director of CMC, has joined DCC International

Peter Turner, formerly an IDMS database consultant with ICL, has been appointed systems consultant with the software services division of Safe Computing.

Keith Oliver becomes a viceesident of Booz Allen and Hamilon, based in the London office. reviously he was a consultant with

#### Rediton opens Hull office

A SALES office recently opened by Redifon Computers to serve York-shire and Humberside will be managed by territory manager Gary O'Nions. The address is Wassand eet, Hull, North Humberside HU3 4AL, and the telephone number (0182) 26714 New appointments at Redifor are

those of Les Fertel, formerly a senior sales executive with Honeywell, as accounts South, and Steve Gill as London branch manager, previously district manager (manufacturing) with ICL.

## Soccer

#### Summer Computer League IN Division IV, the team from Division IV

Staffscene has changed its name to Targa and will be referred to as such from now on.

Datascene 4, Rank Xerox 4 Division II

ICL 2, John Lawis 2 Datasoive (City) 4. Lambeth 3 Datasolve (WE) 2, Victoria 1 Victoria 3, 3M 3

Wellorax 3, Computer Weekly 5 Bunzi DS 5, Targa 4

## Northern 5-a-side

CDC 6, Jadpu B 1

Quadrant best ICI(CMS) 5-2 in t replay of the final of the Northern live a side formament played at the Knutsford Sports Centre.

Gurent problems and methods in par-tial differential equations (Fourth Sum-mer School). Liverpool and Manchester Universities. Department of Mathe-matics, University of Manchester.

Moeting, CMC Users' Assuciations (CUMAC), Norfolk County Council, Nor-wich, 1630, Dotails, Majdenhead 29325 IULY 13 Meeting, SCS Software Engineeing Group, Brkbeck College, London WC2. JULY 18-28

Artificial intuiligence, conference, AISB/GI, Hamburg, Detail, Detak Sieg man, Leeds 31731; ext 7284 ULL: 18-20

Lical authorities group meeting 16M Computer Users Association. INLOGGV Binningham University.

Stuthern Group meeting. IC: Data Entry Users Group. HSV Ltd. Basing. AUGUST CA Compulers co Putosy transfer

Information Technology Information Processing Association of Island I.E. AUGUST 21-24

Operational data security workshop Operational data Security Cosp. City University, London FC1, Register August 16-01-253-939; ext 347. AUGUST 21-25

Cylernetics and systems fourth international congress World Organization of General Systems and Cybernetics Assisting Dr. J. Rose, College of Secondary, Blackburn, tel 0234 64321 AUGUST 22-25

Conference on parallel processing IEEE Computer Society Wayne State Moversity, Ballaire, Michigan, USA: Aliguet 23-25
Siggraph 78, this conference on com-puter graphics and inversitive techni-ques. Association for Computers Machinery Adapta, Georgia, USA

ALIFUST 28 SEPTEMBER! Eighth Australian Computer Con-ference, Australian Computer Sergely

## COMPUTERS AND THE ACCOUNTANT

# Bored invoice clerks 'soon thing of past' **By Paul Rayner**

IT has been said that the pur- or by accounting machine is an many companies from fully pose of any business is the production of invoices; for businesses only make or supply things in order to get paid; and first receiving a clear and com-

A speedy and accurate invoicing system is, therefore, essential to the success of any business. Speed is important in avoiding cash-flow problems. For the sooner the invoice is issued, the sooner the customer

Accuracy is necessary in order to prevent disagreements and disputes which may delay payment and lose customer good-

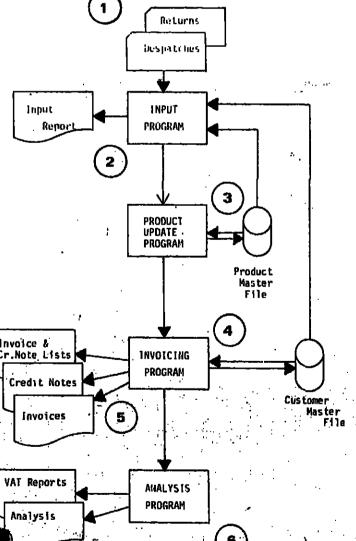
Producing invoices manually

exacting and tedious task. Product prices must be looked up, discount structures checked. extensions verified. VAT and sundry charges calculated and the totals posted to the sales edger. This must done to a very tight timetable. At first sight the invoicing department is a prime candidate for computerisation. Yet many

companies have repeatedly decided against this. With all its failings, a manual system is flexible and in today's highly competitive market place the ability to change

pricing policies and discount structures is essential to success. It is this need for flexibility

that has, until now, prevented An obvious solution for the



. A flowchart showing the moin parts of the NOR-INV system

automating their invoicing de-partment. Even a simple invoicing system requires a big investment in programmer time and once the programs are written it requires a further investment to change them.

The marketing department of the company is thus "locked-in" to a set of pricing policies and discount structures that may no longer be suitable.

Careful design and clever programming can make the programs flexible enough to meet the likely fluctuations in marketing policy. However, many computer departments have neither the time nor the resources for such sophisticated

user who wants a first rate system, is to buy a ready-made and fully tested program package. A choice of packages is now available, with a wide range of prices and facilities. Some are merely in-house systems which the writers think are good enough to sell to others.

Some, however, have been written by reputable software houses with the specific aim of being flexible, general-purpose packages usable by a wide variety of companies.

There are certain basic requirements that any packaged invoicing system must fulfil, it should: I. Produce invoices and credit notes; 2. Handle VAT and discounts; 3. Allow the processing of non-stock items and "one-off" customers; 4. Print a register of all invoices and credit notes produced: and 5. Print out control information so that auditors and others can verify that everything has worked cor-

In addition the invoicing system will need to pass details of all invoices and credit notes over to the sales ledger. This "passing across" should be automatic. Ideally the customer information common to both systems should be held on one set of files.

sort saves manual work, ensures that the two systems always balance and avoids inconsistencies with customer names and The invoicing system should

system. This is essential to ferent from that contained on an access product descriptions, involce sent by a garage. prices, units of issue, etc. Again information common to both invoices is the pricing and dis-

set of files. Obviously it would be foolish to have two product master files — one for invoicing and one for the stock system. Finally, the system should

ease the task of both the financial and management accountants by producing VAT reports and sales analyses. This information should all be available within the system and it should be made available in suitably laid out form to all those who need to use it.

The simplified diagram special reduction below list price on the left shows the system flow of a typical package, namely the NOR-INV package In a business any or all of developed by Northern Software

returns from customers are ent-ered as input. This can be either tomers may get discounts on some product lines, but not on from manually prepared input or can be computer records transferred from a sales order processing system: 2. The manually perpared input is checked for validity. This

involves looking up product and customer codes on the product and customer master files. The system also allows input relating to non-stock Items and nonstandard customers 3. Details of stock-items are picked up from the product

up includes descriptions, prices, count and VAT codes; 4. Names, addresses and discount codes for standard customers are then picked up from

master file. Information picked

the customer master file: 5. With all the necessary information now available, the user's invoices and credit notes can be printed together with an invoice credit note register: and

6. The analysis routines allow the user to get management reports such as sales analyses and audit reports. The real problem with in-

volcing comes with the actual invoice document itself. Whilst certain information must, by law, appear there is no such thing as a "standard" invoice. A complete interface of this Instead every business has a different layout. On the whole, these dif-

ferences reflect the diverse characteristics of the organisations issuing them. For example, an invoice from a flour miller will also interface with the stock, have to contain information dif-An even more varied item on

Due to the success of early accounting systems, accountants have realised that computers can give management information that could only be obtained previously at great cost and effort.

However, while the earlier implementations were few and well defined, many of the present ones require the skill and ingenuity of systems designers to be further extended both in-house and by the software houses.

in the first article in this feature Paul Rayner, European Marketing Manager of Northern Software Consultants, urges that new systems

In a business any or all of



must be flexible if they are to be more cost effective than manual

custom of the industry, com counting structures to be used. bined with the company's cur-For example, there are many rent marketing policy. different types of discount: pro-Like anything in the commerduct discount, eg 10% discount

cial world, marketing policies in this item: customer discount. eg 15% discount for favoured change. As they change so do the price and discount structure. customers; quantity discount, eg 10% lower unit price when more For example, a new type of disthan 50 delivered; invoice value count may be necessary in order discount, eg 5% discount on all to secure a big new contract. For a computer bureau, or the involces worth more than £100.00; settlement discount, eg

computer centre of a group of 3% of total to be paid, if payment companies, the problem is even is received within seven days: greater, for each user will proband, special discount, eg a ably require something dif-This results in a great expennegotiated by the salesman so as diture of time and effort in modifying programs for each

user, and then maintaining the these discounts may be used in a complex inter-relating struc- many different versions of the 1. Details of despatches and ture. For example, certain custurns from customers are entitioners may get discounts on The only real solution is to have a system that allows each

The actual structure used

usually reflects the trade- Turn to page 13

#### SALES INVOICE

00000007 YOUR BUSINESS LID ACCOUNTS DEPARTMENT 15 CROSS STREET MANCHESTER M2 1WF

MORTH SEA SUPPEILS LEU-MERD OFFICE FORTHOIS HOUSE '27 UNION STREET ABBROSEM

0000001236 D66024

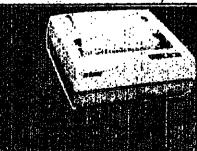
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Special Instructions REMAINING 35 MTA OF CUPICO TO BE SENT MELL MEEK 0.44 19.35 OCCHSULTANCY - JASH 10.55 47.00 STOOSI GITUMENIZED WAAP. TAPE REEL

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Totals 149.45 11.16 AMRIMT 10 PAr 151.71 3t Discount allowed if payment full received within 30 days

Figure 2. A typical involce produced by the NOR-INV system.



This essay, which won a negative aspects the human ment Services (Smeth-

special award for John race is likely to face in the wick). The essays of the

Finnie of Solihull, in the years to come rather than two other special award

Dataskil essay competition, most of the other entrants Dublin, and A. Thornton of

Computerstyle 2000, is foresee. The author works Derby, will be published

more pronounced for the for GKN Group Manage- soon.

Weekly/ the positive benefits which winners, Paul Holden of

IN THE BCS Specialist Group or the Disubled, of which I am the new secretary, there has been a lot of talk of training the disabled for work as programmers and of producing electronic aids to help the disabled find work in the computer in-While this is laudable for those

who are actively seeking work, I feel that it puts extra pressure on

Much has been made of the effects of microprocessors in inking over a great deal of the workload leaving more time for leisure activities. This calls for a different attitude to work. At present society judges a man by his work and people vie with each other to explain how long and hard they work.

With modern aids in communication, word processing, computing, etc. a whole new world is opening up to even the most severely disabled. With these aids they will be able to researchers, etc. How much better, when asked the question "What do you do?," instead of saying, "I am disabled," I could answer I am writing a novel, or am studying the flora of the

If the disabled, an "enforced monopoly? We all know that the economic collapse? leisure class," can make use of new technology to become useful citizens they may be able to point to the way the rest of society will have to learn to live and enjoy its leisure — when all the jobs we now consider nost important have been taken over by computer-board sys-

Secretary BCS Specialist Group for the

## Too late for Britannia

NOTE that you have given a rief report on the introduction f the Britannia Building Sociey's terminal system, Midas CW, June 22). The information the story was issued by us in a ress release towards the end of st year and is some six months ut of date. Perhaps your jouralists would better be mployed writing history books. The story mentions that empletion of the first phase of ie system was expected in June nis year and, in fact, the ter-ninals have been installed in 49 ranches on schedul

D. MAWDSLEY Data Processing Manager cek, Staffs. ongratulations to the Britannia

or gelting its system up and unning on time. We dealt with e story when the information as first issued but it missed the ICL I recognise the dominating out that time round and was position built up by IBM. But I gurgitated by the system a do not fancy that this would be specification by anything likely to different magnitude from those on slipped past our sharp, be achieved by the NEB that they inherited My recollectional eyes on this occasion. Moreover, it is not valid to imply was over 1,000% a year and the hang our hands in that customers have nowhere to current rate is between 20% and hat our readers would want to iltulions have, of course, had imilar terminal systems runing for some time. - EDITOR

The Editor ivalcomes letters on subjects published in Computer Vyeakity, or an original tide on All letters must be accompanied by the legiter's there and address, not necessarily for publication. All letters are liable to be out at the discretion of the Editor, unless contraventations assess that their letters may not be fait.

# LETTERS

To: The Editor, Computer Weekly, Dorset House, Stamford Street, London SE1 9LU

## More questions for the Tories

Weekly Interview with Sir Keith Joseph, who coordinates the Tory Party think lank, the Centre for Policy Studies (CW, April 27), a reader, J. Blair, wrote to the Editor suggesting further questions that could be posed. The questions were forwarded to Sir Keith and he has now replied. Here we publish Mr Blair's questions and Sir

Question 1: if State intervention is always so disastrous, would Sir Keith still oppose the Ferranti rescue? This firm has been transformed from a "lame duck" into a record profit maker. Had Industry Secretary Tony Benn not injected £15 million into Ferranti, after NatWest's refusal to extend the overdraft, would we have seen more competition or more

have been parcelled up between Question 2: The same as

with the names of the leading UK software houses. Question 3: Sir Keith has a touching belief that "the consumer controls industry." Has he ever bought anything from

Question 4: The same as Question 3, replacing IBM with

Question 5: If the Post Office is the technological dinosaur of Sir Keith's nightmares, how come it has beaten the world with viewdata/Prestel?

Question 6: If public spending curbs, plus dramatic tax cuts, are the key to freedom and prosperity, why did the best example of this treatment— Chile-lead to complete

with them. Your Question 5 suggests that

the Post Office development of

viewdata and Prestel acquits the

Post Office of being techno-

logically inadequate. I still say

that the Post Office has been a

bad client to the private sector in

## Sir Keith replies

SIR Keith replied as follows: Your Questions I and 2 suggest that if Ferranti or the leading UK software houses had not been taken on board by the NEB. they would have been "parcelled up" by a handful of big coms. There are several points

to make in reply. First, because companies are the sense that it has not encouble it does not follow that they raged designs and services with do not compete. If they act in a wide enough world market to on, then there are powers ensure longer runs and, there-

capital taxation were less heavy

and if government spending and

regulations, coupled with con-

trois on pay, prices and dividends, did not so stifle the

private sector, we would have a

far more numerous and active crop of companies.

As you probably know, the

death-rate of small businesses

has rocketed and the birth-rate

Your third and fourth ques-

tions imply a seller's market in connection with both IBM and

of small businesses has plum-

meted these last years

for governments to investigate fore, lower costs, than its own orders can justify. Secondly, the shortage of The Post Office has the vigorous and expanding commonopoly. From the finance nies in many fields flows from that reaches it, due to that the incomprehension and the monopoly, it sets aside substanhostility in relation to enterprise tial money for research. It would manifested to some extent by be extraordinary if the research produced no good results. several post-war governments. and, in particular, by the present government. If income and

On all the issues of Post Office adequacy, I ask you to read the Carter Report, which is the source of much of my informa-

Finally, you suggest that Chile is an argument against my view that there should be a shift of resources from the public to the private sector. I am no great expert on Chile but I wonder whether you are more of an ex-As I understand the position,

the Allende government left Chile in the grip of a horrendous the present government has managed to bring down in a few most other IBM operating sysyears to figures that, though still tems to run under VM.

## now of the progress that has een made by building societies. Solution is not unique this area it is still a pioneering senture by the Britannia. I FELT it incumbent upon myself to inform you that you lithough various banking in for the cryptogram: I FELT it incumbent upon myself to inform you that your solution and reports soon filtered back

GIRL LOVE is not unique. Another possible solution is:

653

As you will see, both 663 and 9427 are prime numbers Culham Laboratory, Oxfordshire.

Virtual Machine

operating system, from IBM, has come in for an un-Question I, replacing Ferranti accustomed glare of publicity over the past few months as a result of widespread suggestions

that it is likely to be featured strongly in the announcement of is to replace the low end of System 370. Whether or not the forecasters have got it right. VM offers a unique range of capabil-ities to IBM 370 and 3030 series users and is well worth a second

ONE of the few certainties in the com-

puter industry, over the next decade, is that preservation of users' investment in

software will assume a steadily growing

importance. So it is safe to assume that

one of IBM's lesser known operating

look at the

Taking a second

VM/370 was born out of a project at IBM's Scientific Cenire at Cambridge, Massachusetts. In 1964, the centre began working on a project which was intended to make computers more accessible to the user. The first step was to develop hardware and control software, producing an experimental machine which added virtual addressing to the

In 1967, the only IBM 360 machine with virtual storage, the 360/67 was announced. together with the Control Program 67 operating system and CMS time sharing software.

CP-67 was the direct forerunner to VM/370, and CMS at that time stood for Cambridge Monitor System. The name, though not the abbreviation, was later changed, and CMS now signifies Conversational Monitor System. The development work continued within IBM and CP-67

evolved into CP-370; this ran on a 360/67, and made it possible to emulate the virtual storage 370 environment before the hardware was available.

In 1972; the first virtual storage 370s were announced, together with four new operating systems. DOS/VS replaced DOS; OS/VS1 replaced MFT and OS/VS2 replaced MVT. The fourth operating system was VM/CMS, which initially simply enabled several users of a 370 running under VM to set up their own CMS "virtual

The key feature of VM/CMS. was this facility which allowed virtual machines to be set up within the system. Although CMS provided something new, and was therefore initially stressed, it was equally possible to set up virtual machines for

enabling them to do program development on their machine using CMS while simultaneously running at least a part of their standard workload under their mainstream operating system. However, that while MFT ran quite efficiently under VM, OS/VS1 and DOS/VS Imposed overheads which for many users were unacceptable.

This was hardly surprising, since even without CMS, VM iuplicates many of the features of any mainframe operating system, but it limited usage of

In 1974, 18M offered a VM assist feature for the 370/135, 146 and 168, which went some A.G. HILLIARY WAY to improving VM performance by putting parts of it into

THE Virtual Machine, VM/370, microcode. It was only available priority, while the computeas a "special", RPQ or Request bound jobs get longer time seg-Price Quotation in IBM par- ments at lower priority. The lance, on the 168, because the operator can anyway control latter is not a microcoded the priority given to different parts of the system.

systems, and one which offers a solution

to the problem of operating software

compatibility, will emerge from the sha-

dows and gain an increasing number of

devotees in the months and years to

Since VM/CMS is an

debug facilities. The Cobol com-

the same as that under OS.

pller with interactive debug is

There is also an assembler,

VS Basic with interactive debug, and a VS APL, and other 360

compilers and packages have

been adapted by users to run

Access methods supported by

VM/CMS are Virtual Storage,

VSAM; Sequential, SAM; Basic Direct, BDAM; and Busic Parti-

As CMS was designed to be

easy to use, there are a number

of attractive features, notably a

synonym facility which allows

standard functions in the com-

mand language to be renamed,

an aid much appreciated by

people who do not understand

Apart from online program

development in general, the area where VM offers significant

bonefits is where a user has

moved from, say a 138 to a 3031,

and intends to switch to a new

operating system. He can set up

one or more virtual machines to

run his full existing workload.

while doing program translation

and developing completely new

applications under CMS, later

running adapted programs

under the new operating system,

a reduced workload under the

old one, while program develop-

tioned, BPAM.

much English.

In 1975, the shortcomings of OS/VS1 under VM were operating system in its own alleviated by modifications to right, it comes with a number of Release 4 of VSI, which made it language compilers. The PL/I possible to use the VM page optimising and checkout comsupervisor, thereby eliminating one area of inefficient duplicaunder OS; the same three Fortran compilers as are available The following year, assist fea-tures for DOS/VS were anwith OS are supported by CMS. but have additional interactive

370/138 and 148 appeared, which offered an extended VM assist as an option. Called VM Extended Control Program Support, this firmware offered very significant improvements in VM performance.

Unlike most of the earlier offerings, it improved the running of VM across the board. regardless of which operating system was being used under



## By TIM PALMER

VM, and also enhanced CMS

The approach to producing this enhancement to performance was to run hardware and software monitors, in order to determine which parts of the operating system would offer significant performance improvements if they were reimplemented in microcode. The result using VM-ECPS is claimed to be an improvement of up to five times and a reduction of up to 50% in total VM super-

Any operating system designed to run on an IBM 370 can years to figures that, though shift it offered a time sharing restriction to a specific range of different magnitude from those facility for medium scale users, proprietary IBM operating sysbe run under VM; there is no Although CMS is designed

primarily for online interaction, there is a CMS batch facility, and it is possible, and indeed is done, to run VM and CMS without any other operating system. However, it is not possible to run CMS without VM. Within IBM there are large CMS-only systems used for such

applications as engineering modelling. At the Watson Research Labs there are three 168s, two of them running VM/ CMS only and supporting saveral hundred terminals, while the third runs MVS with Time Sharing Option. Where a number of CMS virtual machines are supported, together with a workload rup-

ment continues, all on the one machine and simultaneously. Now that 148s have been delivered in larger numbers, the acceptance of VM has risen

sharply, although perhaps not to the extent that IBM might have wished; the company has been promoting the concept that a VS1 user with a 145 should run his VSI workload under VM. alongside CMS. It is anyway ficult to gauge how widely VM is actually used, because although a growing number of installations have the tapes. 5e II rainer intredi The minimum configuration

required to run VM has grown to a 384K-byte 370/135, but memory limitations will be a thing of the past once the Eseries appears, because the new IBM line is expected to offer memories in the 1 to 2 Megabyte range of the 148. It is significant that the new National Semiconductor System 400 32-bit minicomputer, which

has the full 370 instruction set, is

offered with only two operating systems; DOS/VS and VM/370. The National Semiconductor machine reflects the declining cost of hardware in that it offers up to 16 Megabytes of main memory, and this trend, allied to the accelerating cost of software development is minim ning under some other operating system, each terminal is allocated a short time-slice at high disadvantages and enhancing the attractions of VM, indicating a bright future for this unusual operating system.

## By JOHN FINNIE

IT ought to have been obvious if we had listened to the lesson of which says that technological prediction is generally right, but social prediction is generally. wrong. The gazers into the crystal ball in the late 1970s should have listened to that lesson. Their technical predictions came awesomely right. Micros, fibre optics, telecommunications all threw up marvels beyond the most ambitious dreams and at prices which stood the inflation curve on its head. The predictions of the social effects were hopelessly

For example, the technical developments to what was known in the mid-1970s as the TV set have been remarkable. As predicted, it did become the key to an incredible store room of knowledge though it took 10 years from the introduction of viewdata, before the entire contents of the British Library shelves supplemented the airline timetables and mail order catalogues that had previously iominated the databanks; and a further five years before the

> Viewdata never became the overwhelming success that was predicted for it. The basic reason for its decline was that few husbands and wives could bear to read the same text

Library's collection of erotica became available to adult viewdata subscribers.

Yet viewdata never became the overwhelming success that . was predicted for it. The basic reason for its decline was that few husbands and wives could bear to read the same text cases where their reading interests matched precisely there were bitter arguments over relative reading speed, and over the control of the "next page"

The use of the interrogative facility went through several phases. Initially very clever people programmed their own chess games; and not-so-clever people played at packaged games such as blackjack, the golf game and the moon landing game. The next stage was the development of the Diagnostic Service. Encouraged by their success with the Car Maintenance Diagnosis Package, Interrogative Services Inc launched two further packages

for home use in 1985. The "Are you Sane, Mad or drew a furious reaction from the British Medical Association. The

these attacks brought interro-them out in a script not compat-memos to people of influence which when written by the mini those people, that is, who did not enthusiasts implied that the errogative facility reverted to choose to exercise their legal imple applications such as ad-rights to use mill-stones or dead rice on how four people could be albatrosses as cheques. The ed to acceptable nutritional tandards given that the availto acceptable nutritional transport hat the available resources consist of, say, one tin of corned beef, one jar of qualls in aspic, two potatoes and a pinch of chives.

The impact on sport has been more permanent. Only traditionalists have held out against tuch sportsman's aids of the cardiac Arrest Predictor; for

joggers and squash players, and the golfer's micro which displays the recommended club choice and length of backswing, taking But if paid by cheque, it would into account metres remaining hit the account on the following and the exponentially smoothed Tuesday or possibly Thursday, if career average distance with ough to set up a bank account in that club after adjusting for the Shetlands. The write-off on this investment was so great that it led directly to the nationalisation of the private clear-

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In 1984, the US soccer authorities changed the rules to allow both time out and quarter time intervals which gave the spectator the chance to carry out his file housekeeping and run a selection of displays. And in 1985, they introduced a gridiron pattern of pitch markings to allow distance to be measured more accurately. The UK Football Association resisted these changes until 1987, and adopted them only in the face of competition from Rugby League in-formation technology. The use of the portable micro by football supporters caused initial difficulties, not least in the notorious Millwall riot of 1988 when a police horse was seriously wounded by a micro thrown from the crowd. However, no account of the

mpact of computer technology on the public would be complete Slightly Disturbed" package without mentioning the great point-of-sale debacle. By the 1950s, the clearing banks had 1970s, when so-called minis -"Have you Grounds for become increasingly irritated by massive machines, some larger bivorce?" package was attacked cash, a commodity which made than a wardrobe — were intro-Society and by Women's Lib groups which objected to the "Does she ever refuse to say where she has been?" gendering of the questions.

The legal costs of fighting off these attacks brought interrochoose to exercise their legal contraints people weighted the contraints of the word processing propring up a decaying empire, facing up to the word processing albatrosses as cheques. The banks put a massive investment into setting up real time instant debit systems.

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Senior management were half hearted in tackling this conflict,

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impact on employment was not. dogma, the effects became pro- If we look back to the mid-1970s, thought on the question of employment — the Doomsday School which demanded government intervention to stop the world being turned upside down; the Boy Frankenstein attitu School which held that the ment. technologist could not reasonably be expected to put right society's problems, but that if society could only show the same inventive genius as the and enjoy it" slogan, and in part technologist, then what a world it would be; and the Free Market Forces School which reckoned that all that the world was facing was a redistribution of

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employment.
With the benefit of hindsight 25 years on, we can see that the Doomsday School were broadly ight in predicting the worst, but that they were touchingly optimistic in hoping that governments could break away from democratic inertia. It took, after all, the Ethiopian seizure of the Saudi oil fields before the US government pushed up its gasoline tax to a discriminatory level. On the other hand, and again

with the benefit of hindsight, it was unrealistic to suppose, as that each production line job displaced by a robot would be lanced out by a production that job should vanish a job selling robots would emerge to

preserve the equilibrium. Only in the computer industry itself was anything approaching equilibrium involved a massive workforce to the extent that world production depended upon a handful of ladies with keen evesight and soldering irons in Bataam (a lower labour cost location for the Telwanese companies); a massive reduction in account executives, regional managers, industrial sector coordinators and others with a fine nose for the wine list; counter balanced by a huge increase in merchandisers who laboured facing up to the word processing sway in company tee shirts re-dilemma. By 1983, it was possible stocking the shelves in the com-for the manager's written text to puter discount houses. In most other industries there was still the belief that in the long run the equilibrium might yet come right, but most had the sinking

> the early 20th century economist Maynard Keynes had pointed out, we are all dead. towards untemployment can be not more than 50.

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stated—was to give State support to those industries which were under structural threat from the micro revolution. The support was indiscriminate, and was so costly that this policy is considered to have been instrumental in bringing down the The incoming Social Democrat coalition ended that support, and after tacitly recognising the impossibility of creating the new iobs promised in the election manifesto, launched a massive campaign to change public attitudes towards unemploy-The aims of the campaign

were well meant, but it achieved a certain notoricty, in part through its use of the "Lie back through employment as Government Leisure Advisers of retired hippies from the early adjudged an honourable failure. Not even the legalisation of cannabis in 1991 could shake the influence of the Work Ethic. Hundreds of years of conditioning had convinced the Western world that it was better to work than not to work, since not only would Satan surely find some mischief for idle hands to do, but in the early 90s there was still a marginal financial advantage in favour of working. In the face of that failure, the

government set up in 1995 three new institutions — the Depart ment of Leisure Technology. which gives financial support the Free Market Forcers did. for the development of devices

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which makes idleness more tol-erable; the Department of Employment Preservation, which sets the financial levy to be paid by companies, manufaction, which compensates com panies for every labour saving machine taken out of use. The most authoritative pre-

feeling that in the long run, as dictions suggest that society should have successfully adapted to the technical revoluout we are all dead. tion within the next 10 years.
UK government policy Perhaps 20 years, but definitely

IN THE BCS Specialist Group for the Disabled, of which I am the new secretary, there has been a lot of talk of training the disabled for work as programmers and of producing elec-tronic aids to help the disabled

dustry.
While this is laudable for those who are actively seeking work, I feel that it puts extra pressure on

Much has been made of the effects of microprocessors in taking over a great deal of the workload leaving more time for leisure activities. This calls for a different attitude to work. At present society judges a man by his work and people vie with each other to explain how long and hard they work.

With modern alds in communication, word processing, computing, etc, a whole new world is opening up to even the most severely disabled. With these aids they will be able to become writers, artists, ter, when asked the question "What do you do?" instead of saying, "I am disabled," I could answer I am writing a novel, or am studying the flora of the

If the disabled, an "enforced lelsure class," can make use of new technology to become useful citizens they may be able to point to the way the rest of sociaty will have to learn to live - and enjoy its leisure - when all the jobs we now consider most important have been taken over by computer-board sys-

R. A. POTTER Secretary
BCS Specialist Group for the
Disabled

## Too late for Britannia

I NOTE that you have given a brief report on the introduction of the Britannia Building Socie-ty's terminal system, Midas (CW, June 22). The information in the story was issued by us in a Press release towards the end of last year and is some six months out of date. Perhaps your journalists would better be

employed writing history books.
The story mentions that completion of the first phase of the system was expected in June this year and, in fact, the terminals have been installed in 49 branches on sched

D. MAWDSLEY Data Processing Manager Britannia Building Society

Congratulations to the Britannia for getting its system up and the story when the information boat that time round and was position built up by IBM. But regurgitated by the system a a do not fancy that this would be couple of weeks ago. The repeti-shettered by anything likely to tion slipped past our sharp be achieved by the NEB. editorial eyes on this occasion and we hang our heads in that customers have nowhere to shame. Nevertheless we are sure, go but IBM or ICL. that our readers would want to venture by the Britannia stitutions have, of course, had similar terminal systems run-ning for some time. – EDITOR.

The Editor welcomes letters on subjects published in Computer Weskly, or on original topics. All letters must be accompanied by the writer's name and address not be subject. dress, not reconstrily for publi-cation. All letters are liable to be out at the discretion of the Editor, liming correspond firsts state that their letters may not be dut.

# LETTERS

To: The Editor, Computer Weekly, Dorset House, Stamford Street, London SEI 9LU

## More questions for the Tories

Weekly interview with Sir Keith Joseph, who coordinates the Tory Party think lank, the Centre for Policy Studies (CW, April 27), a Editor suggesting further questions that could be posed. The questions were forwarded to Sir Keith and he has now replied. Here we publish Mr

Blair's questions and Sir Keith's answers . . . . Question 1: If State intervention is always so disastrous, would Sir Keith still oppose the Ferranti rescue? This firm has

been transformed from a "lame duck" into a record profit maker. Had Industry Secretary Tony Benn not injected £15 milinto Ferranti, after NatWest's refusal to extend the overdraft, would we have seen more competition or more Chile-lead to complete monopoly? We all know that the economic collapse

FOLLOWING the Computer plum Ferranti divisions would

GEC and Picssey.
Question 2: The same as Question 1, replacing Ferrantl with the names of the leading UK software houses.

Question 3: Sir Keith has a touching belief that "the consumer controls industry." Has he ever bought anything from

Question 4: The same as Question 3, replacing IBM with

Question 5: If the Post Office is the technological dinosaur of Sir Keith's nightmares, how come it has beaten the world with

Question 6: If public spending curbs, plus dramatic tax cuts, are the key to freedom and prosperity, why did the best example of this treatment—

## Sir Keith replies

SIR Keith replied as follows; Your Questions 1 and 2 suggest that if Ferranti or the leading UK software houses had not been taken on board by the NEB, they would have been "parcelled up" by a handful of big comies. There are several points to make in reply.

First, because companies are big it does not follow that they do not compete. If they act in collusion, then there are powers for governments to investigate

Secondly, the shortage of vigorous and expanding com-panies in many fields flows from the incomprehension and the hostility in relation to enterprise manifested to some extent by several post-war governments and, in particular, by the present government. If income and capital taxation were less heavy and if government spending and regulations, coupled with con-

trols on pay, prices and dividends, did not so stifle the private sector, we would have a lar more numerous and active crop of companies.

As you probably know, the death-rate of small businesses has rocketed and the bifth-rate of small businesses has plum-

moted these last years. Your third and fourth questions imply a seller's market in connection with both IBM and Moreover, it is not valid to imply

with them. Your Question 5 suggests that the Post Office development of Post Office of being technologically inadequate. I still say that the Post Office has been a bad client to the private sector in the sense that it has not encouraged designs and services with a wide enough world market to ensure longer runs and, there-

orders can justify.
The Post Office has the monopoly. From the finance that reaches it, due to that monopoly, it sets aside substan-tial money for research. It would be extraordinary if the research

produced no good results. On all the issues of Post Office adequacy, I ask you to read the Carter Report, which is the source of much of my informa-

Finally, you suggest that Chile is an argument against my view that there should be a shift of resources from the public to the private sector. I am no great expert on Chile but I wonder whether you are more of an ex-

As I understand the position. the Allende government left Chile in the grip of a horrendous the present government has managed to bring down in a few | most other IBM operating sysyears to figures that, though still very bad indeed, are of a quite different magnitude from those that they inherited. My recollection is that the inherited rate was over 1,000% a year and the ourrent rate is between 20% and 30% a year.

## know of the progress that has Solution is not unique

in this area. It is still a plonearing I FELT it incumbent upon myself to inform you for the cryptogram:

> GIRL. ELOPE is not unique. Another possible solution is: BB31 9427 750 i`

As you will see, both 663 and 9427 are orime numbers. Culham Laboratory,

ONE of the few certainties in the computer industry, over the next decade, is that preservation of users' investment in software will assume a steadily growing importance. So it is safe to assume that one of IBM's lesser known operating

systems, and one which offers a solution to the problem of operating software compatibility, will emerge from the shadows and gain an increasing number of devotees in the months and years to

By JOHN

IT ought to have been obvious if we had listened to the lesson of

the past, to that one lesson

which says that technological

prediction is generally right, but

social prediction is generally

wrong. The gazers into the

crystal ball in the late 1970s

should have listened to that lesson. Their technical predic-

tions came awesomely right.

Micros, fibre optics, telecommunications all threw up mar-

vels beyond the most ambitious

dreams and at prices which

stood the inflation curve on its

head. The predictions of the

social effects were hopelessly

For example, the technical

developments to what was known in the mid-1970s as the

TV set have been remarkable. As

predicted, it did become the key

to an incredible store room of

knowledge though it took 10

years from the introduction of

viewdata, before the entire con-

tents of the British Library

shelves supplemented the airline

timetables and mail order cata-

logues that had previously

dominated the databanks: and a

further five years before the

Viewdata never be-

came the overwhel-

ming success that

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The basic reason for

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became available to adult

Yet viewdata never became

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reason for its decline was that

few husbands and wives could

bear to read the same text

simultaneously; and in the few cases where their reading inter-

ests matched precisely there

were bitter arguments over

relative reading speed, and over

the control of the "next page"

The use of the interrogative

facility went through several

phases. Initially very clever

people programmed their own

chess games; and not-so-clever

people played at packaged games such as blackjack, the

golf game and the moon landing

game. The next stage was the

development of the Diagnostic

Service, Encouraged by their success with the Car Mainten-

ance Diagnosis Package, In-

British Medical Association. The

for home use in 1985.

simuitaneously.

viewdata subscribers.

FINNE

# Taking a second look at the Virtual Machine

operating system, from IBM, has come in for an unaccustomed glare of publicity over the past few months as a result of widespread suggestions that it is likely to be featured strongly in the announcement of the forthcoming E-series which is to replace the low end of lystem 370. Whether or not the forecasters have got it right, VM offers a unique range of capabilities to IBM 370 and 3030 series users and is well worth a second

VM/370 was born out of a project at IBM's Scientific Centre at Cambridge, Massa-chusetts. In 1964, the centre pegan working on a project which was intended to make computers more accessible to the user. The first step was to develop hardware and control software, producing an exled virtual addressing to the

then new 360/40. In 1967, the only IBM 360 nachine with virtual storage, the 360/67 was announced, together with the Control Program 67 operating system and

CMS time sharing software, CP-67 was the direct forerunner to VM/370, and CMS at that time stood for Cambridge Monitor System. The name, though not the abbreviation, was later changed, and CMS now signifies Conversational Monitor System.
The development work con-tinued within IBM and CP-87

evolved into CP-370; this ran on a 360/67, and made it possible to emulate the virtual storage 370 nvironment before the hardware was available.

In 1972; the first virtual storage 370s were announced, together with four new operating systems, DOS/VS replaced DOS; OS/VS1 replaced MFT and OS/VS2 replaced MYT. The fourth operating system was VM/CMS, which initially simply enabled several users of a 370 running under VM to set up their own CMS "virtual machines."

The key feature of VM/CMS was this facility which allowed virtual machines to be set up within the system. Although CMS provided something new, and was therefore initially stressed, it was equally possible to set up virtual machines for tems to run under VM.

It offered a time sharing facility for medium scale users, enabling them to do program development on their machine using CMS while almultaneously running at least a part of their standard workload under their mainstream. operating system. However, market response was uneven and reports soon filtered back that; while MFT ran duite efficiently under VM, OS/VSI and OOS/VS imposed overheads which for many users were unacceptable.

This was hardly surprising since even without CMS, VM dupitcates many of the features of any maintrame operating system, but it limited usage of VM.

VM. Out it limited usage of Sharing Opition.

In 1974 IBM offered a VM Where a number of CMS the accelerating cost of software last the string to the scelerating cost of software last together with a workload run.

145 and 158 which well some integrating the west together with a workload run.

Wey to improving VM, perfore system each terminal is allousing the attractions of VM, indicating system.

System each terminal is allousing a bright future for this unusual about time-slice at high operating system.

THE Virtual Machine, VM/370, microcode. It was only available as a "special", RPQ or Request Price Quotation in IBM parlance, on the 168, because the latter is not a microcoded

> In 1975, the shortcomings of OS/VSI under VM were alleviated by modifications to Release 4 of VS1, which made it possible to use the VM page supervisor, thereby eliminating one area of inefficient duplica-

The following year, assist features for DOS/VS were announced, and in mid-1976, the 370/138 and 148 appeared, which offered an extended VM assist as an option. Called VM Extended Control Program Support, this firmware offered significant improvements in VM performance.

Unlike most of the earlier fferings, it improved the run-ing of VM across the board, regardless of which operating system was being used under



### By TIM PALMER

VM, and also enhanced CMS

The approach to producing this enhancement to performance was to run hardware and software monitors, in order to determine which parts of the operating system would offer significant performance improvements if they were remented in microcode. The result using VM ECPS Is claimed to be an improvement of up to five times and a reduction of up to 50% in total VM super-

Any operating system dea co run on an 18M 370 can be run under VM; there is no installations have the tapes. restriction to a specific range of proprietary IBM operating sys-

Although CMS is designed primarily for online interaction, there is a CMS batch facility, and it is possible, and indeed is done, to run VM and CMS without any other operating system. However, it is not possible to run CMS without VM.

Within IBM there are large CMS-only systems used for such applications as engine oring modelling. At the Watson Research Labs there are three 168s two of them running YM/ CMS only and supporting saveral hundred terminals, while

bound jobs get longer time segments at lower priority. The operator can anyway contm the priority given to different parts of the system.

Since VM/CMS is an operating system in its own right, it comes with a number of language compilers. The PLA optimising and checkout comunder OS; the same three Fortran compilers as are available with OS are supported by CMS, but have additional interactive debug facilities. The Cobol compiler with interactive debug is the same as that under OS.

There is also an assembler, a VS Basic with interactive debut and a VS APL, and other 360 compilers and packages have een adapted by users to run under VM/CMS

Access methods supported by VM/CMS are Virtual Storage, VSAM; Sequential, SAM; Basic Direct, BDAM; and Basic Partitioned, BPAM.

As CMS was designed to be easy to use, there are a number of attractive features, notably a synonym facility which allows mand language to be renamed. an aid much appreciated by much English.

Apart from online program, development in general, the area? where VM offers significant benefits is where a user has to moved from, may a 138 to a 3031. and intends to switch to a new operating system. He can set up one or more virtual machines to run his full existing workload. while doing program translation and developing completely new applications under CMS, later running adapted programs under the new operating system. a reduced workload under the old one, while program develop-

ment continues, all on the one machine and simultaneously. Now that 148s have been delivered in larger numbers, the acceptance of VM has risen sharply, although perhaps not to the extent that IBM might have wished; the company has been promoting the concept that a 'SI user with a 145 should run his VS1 workload under VM. alongside CMS. It is anyway difficult to gauge how widely VM is actually used, because although a growing

many use it rather infrequently. The minimum configuration required to run VM has grown to a 384K-byte 370/135, but memory limitations will be a thing of the past once the E. series appears, because the new IBM line is expected to offer memories in the 1 to 2 Megabyte

range of the 148.

The legal costs of fighting off these attacks brought interrogative Services to bankruptcy. From 1986 onwards, the TV in-It is alguificant that the new National Semiconductor System 400 32-bit minicomputer, which terrogative facility reverted to simple applications such as advice on how four people could be fed to acceptable nutritional standards given that the availhas the full 370 instruction set. is offered with only two operating systems. INGS VS and VM/370.
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debit systems. The new facility was uniquely successful with the elderly and the eccentric who had resisted the move to cheque books. It was boycotted totally by the cheque book-bearing classes. of mini-minis, and mici a-minis, which quickly recognised that and stand-alone micros hit the the payment for the Friday night . market, the claims came up time

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This essay, which won a negative aspects the human ment Services (Smethspecial award for John race is likely to face in the wick). The essays of the Finnie of Solihull, in the years to come rather than two other special award Weekly/ the positive benefits which winners, Paul Holden of Dataskil essay competition, most of the other entrants Dublin, and A. Thornton of Computerstyle 2000, is foresee. The author works Derby, will be published more pronounced for the for GKN Group Manage- soon.

were broadly right in predicting the worst hypermarket would produce the after time that the last model elocution. Both courses were classified under three broad phases. Between 1978 and 1988, massively undersubscribed. An influential study by Kowalski, the policy - never formally stated-was to give State supthe US behavioural scientists on

port to those industries which were under structural threat from the micro revolution. The support was indiscriminate, and was so costly that this policy i considered to have been in strumental in bringing down the Hattersley government in 1989 The incoming Social Democrat coalition ended that support and after tacitly recognising the impossibility of creating the new jobs promised in the election manifesto, launched a massiv campaign to change public attitudes towards unemploy The aims of the campaign

were well meant, but it achieved a certain notoriety, in par through its use of the "Lie back and enjoy it" slogan, and in parthrough employment a retired hippies from the earl 1970s. The campaign must b adjudged an honourable failure Not even the legalisation of cannabis in 1991 could shake th influence of the Work Ethi Hundreds of years of conditioning had convinced th Western world that it was bette to work than not to work, sinc not only would Satan surely fir some mischief for idle hands t do, but in the early 90s there was

government set up in 1995 three new institutions - the Depart

> The use of the portable micro by footsupporters eaused initiel difficuities, not least in the notorious Millwall riot of 1988 when a police horse seriously was wounded by a micro thrown from the crowd.

which makes idleness more to erable; the Department Employment Preservation which sets the financial levy to partment of Employment Crea

The most authoritative pre the early 20th century econom-should have successfully ist Maynard Keynes had pointed adapted to the technical revolu-out, we are all dead. tion within the next 10 years

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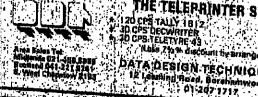
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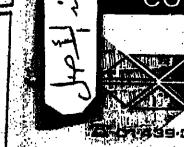














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COMPARATIVELY little is known in Western Europe or the US about the Comecon countries' unified range of Rjad ES-series computers.

The one country outside the Eastern bloc which has built up thousands of manhours of experience on the machines is India, where

about a dozen ES-series

from Delhi, Bombay and

# Paying for

companies and organisations in india are the ones which have been collaborating with the USSR and East Germany on the development of computer software. Where visible, the Soviet presence is by no means intrusive, and companies were unan-imous in describing their Soviet

customers as exacting but fair.
There are about a dozen Rjad
machines in India, mainly ES1030s and 1020s from Russia and
ES-1040s from East Germany.

Almost all of them have been or are being paid for with software written in India for use in the Soviet Union.

It also appears that although there is a shortage of computers within Eastern Europe, Indian orders are given priority over domestic requirements, the rea-sons being that the Soviet Union has a large balance of trade deficit with India, which exports consumer items like soap and toothpaste, and because there is a genuine need for the software that Indian companies are deve-

loping.
Heading the list of Comecon computer users is Compu-tronics, claiming to be the bigg-est Indian exporter of software, which signed a £600,000 contract with the Soviet Union in April. Computronics handles most of the imports of Eastern Bloc computers and intends to bring in three more in 1978 and seven

Computronics has an ES-1030 in Bombay, an ES-1022 in Delhi, an ES-1020 in Bhilai and an ESan ES-1020 in Bhilal and en ESThe CAI system is being writ. its work in general has to be comes but as the most powerful 80,000 instructions and must The ES-1030 configuration

mainframes are installed. The recent EEC computer delegation to India therefore had a unique opportunity to assess the performance of the

Tim Palmer reports here

# Soviet computers in software

terminals to it over 2,400 bps It also has ambitious plans to write interface software which will enable the 1033 to be connected to the 1022 in Dalhi, running at 4,800 bps, and would ultimately like to interconnect all four centres.

The company is putting 12 man-years of effort into an advanced Computer-aided Instruction system for Moscow

Computronics is putting 12 manyears of effort into advanced Computer-aided Instruction system for Moscovy.

which is to be used as a support facility for college lecturers and will include graphics facilities.

The 1033 will be needed to test out the system which is due for

out the system; which is due for completion by the end of the year and is worth £1.2 million. It will run under the new virtual OS/ES/VS operating system for the Riad range, which is similar

Indeed it appears that the Rjad range really is fully IBM-compatible and that it is possible to load a disc pack from an IBM 360 on to a Riad machine running; under OS/ES with no modifications.

an ES-1020 in Billial and an ES1010 in Allahabad. The 1022
comes our as the most powerful
machine; it is the successor to
than the 1032 of three seconds. It is priced as faster
than the 1032 of three seconds it is being desiphilations under DOS, and
able attors under DOS, and
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training on all Rjad machines, and has over 50 trained mainte-

It is negotiating with Computer Maintenance Corp. the government company which has taken over IBM's maintenance operations, a subcontract which will allow Computronics to continue to maintain all Comecon computers in India. It also plans to manufacture peripherals and data preparation systems.

It is also negotiating software contracts with Siemens on realtime applications and conversion, and with Philips on telecommunications software for the DS 714 switching com-puter for contracts in the Far

Among the most solidly com-petent organisations the delega-tion visited was the Administrative Staff College of India, ASCI, in Hyderabad.

Housed in a beautiful old colonial mansion hung with pink and orange and white bougainvillers, the college was ounded in 1957 to enhance the educational facilities for professional managers.

In the early 70s, the college formed a computer group and got its first machine in 1973. It now has an ES-1030 and an dian designed and built TDC-12, a machine similar to Digital ment's PDP-8.

Since the college is a non-profitmaking foundation, it is free from commercial pressures; but, abart from the software it

printer and a teletype and has Cobol, Fortran and PL/1 com-routines and 15,000 lines of PL/1.

There are 60 professional computer specialists at the college, 20 of them trained abroad, plus another 60 computer support staff. The kind of projects which the

college has worked on in India and would like to collaborate on abroad are mainly in the area of public administration and util-It has developed a system for

calculating optimum pipe sizes and finding the reservoir sites which would produce the minimum water flow unbalance in the water supply system for the city of Chandigarh. The college is currently wor-

king on a management information system for the Andhra Pradesh state government in connection with a minor irriga-The purpose of the work is to

collect rainfall statistics, taking into account major rivers, subbasins, catchments and so forth, calculate the run-off, the water that must be reserved for downstream areas, and then find out how much water is left over which could be channeled into minor irrigation — that is plots of land of between one and 400

The college has also proposed means by which the data which has been collected, including rainfall records going back 76 years, could also be used in flood

All the software written for the Russians is benchmarked against IBM systems, and two packages, a project management system and a vehicle scheduling system are claimed to have 10% more features and to be 20-30% more efficient than the comparable IBM system.

The college runs a wide range computer training courses, and is working with the Iraq National Computer Centre on a program which will involve traince Iraqi teachers attending the college plus lecturers going

> East meets West with a vengeance at Operations Research Group, ORG, of Baroda. ORG has its own ES-1030, an ICL 1901A and an IBM

to Iraq to provide on-the-spot

training. Another area where ASCI has capability is in the development and use of management games, and the college is keen to participate in major projects in foreign countries, particularly in the field of public administra-

and in the foreground is sitting at an Eastern European teletype cun-pingly disguised as a typewriter, andian users of Rjad series comrious. As for the processors an memory, users were unanimous in proising the reliability and performance of the Rinds.

man-months to complete

In Iraq, EIL was asked to don feasibility study into the computerisation of an oil refinery; the study indicated that it was a worthwhile exercise, and one Ell, specialist with one Iraqi designed the system, while three programmers wrote the software for a Univac 9400 which was already installed in Iraq.

EII, has also converted a heatsexchange package from CDC 7600 to IBM 360 for a Dutch company, working only from a program listing, and subsequently received a contract to lesign a heat exchanger.

System software written includes several packages for the rather limited DEC PDP 11/20 mint. A 5K word real time operating system took four man-years to complete and Ell. also wrote a batch operating system, block assembler and on-line debugging system for the 11/20. It is also interested in collaborating on foreign contracts, particularly in the engineering and petrochemical

Underlining the problems and the opportunities — that the Indian computer scene preents is a project executed for the Oil and Natural Gas Commission for administration of 250,000 store items. It involved data collection, keypunching and verification at 17 sites, with a courier service to regional

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Our Client, the DP Centre of an International Management Consultancy, needs a Programmer to join Its Data Processing team located near Victoria Station: Using an In-House Mini: Computer linked to Twin 370/158s, the centre supports a broad DP service to users within the company and directly to For more information and an application Clients of the Consultancy.

Many interesting and, in some cases, unique applications are under development and these will provide you with an opportunity to enhance your programming skills.

The Department is small, but experiencing steady growth. If you are prepared to make an immediate and positive contribution you will grow with them. A salary of up to £5,250, plus an annual bonus is envisaged.

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Applicants must show a projessional approach to their work and

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small business systems based on the TI 99/10 mini

Technical Adviser

organisation, this bureau has recently entered the turnley market with

Demand for their product has been such that JBA has now been retained

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It will initially consist of Analysts and Support specialists and will be the direct responsibility of the successful candidate

Continued growth indicates that this position will queekly bring more seniar responsibilities and status, as the importance and size of the London team expands Contact: Andy Wr

One of the leading computer manufacturers is continuing to expand its

incorporates a mini-computer, has many sophisticated hardware and

Candidates must have a sound systems and programming background

responsible for a new product in the range. The system, which

Ability to linise with user or customer management is essential.

Knowledge of the computer operations area would be an advantage.

Salary is negotiable according to experience. Large company benefits

and be confident in a sales/support environment.

support function and has an opportunity for a person to join a small team

2 years experience of working with MINTs and/or MICRO's, preferably

at ASSEMBLER level. The emphasis is likely to be an process control

and contlative software, so an awareness of these fields would be useful.

Contact: Andy Wright

Contact: Andy Wright

c. £6,000 plus car

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level, you should apply
COMMERCIAL CONSULTANTS should have at least 3-1 years

Systems Analysts or Analyst; Programmers to join them as Consultants

and you would welcome the opportunity to move up to this more semor

Amajor international group require a Technical Author for the preparation of manuals relating to computer apply ations used throughout the U.K. group. The applications include batch and real time systems and distributed processing using advanced design concepts. The histechnical manuals for use by unphraentation and support teams, and manuals topend users of group standard systems are to be produced. This position would be of interest to authors of proven ability in communicating complex technical information in a form appropriate and readily understandable to the areas for which the publication is intended Knowledge of applications relating to materials management of IBM computers is highly desirable

First class apportunity to enter an attractive various situation. Generals relocation will be paid where appropriate. Contact: Mike Crean Contact: Mike Creamer

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The company, a subsidiary of a large multi-national organisation are expanding their development group of software specialists who produce standard or failured package design from first concepts through to successful implementation and provision of technical back-up. All successful candidates will receive training in the  $U.S.\Lambda_{\gamma}$ Applicants should have at least 2 years minisystems experience with any machine type and have sound knowledge of a low level language (ASSEMBLER preferred). This, compled with a self-motivating drive to progress in the group, will ensure total involvement with the butest techniques in this type of processing. liked opportunity to get involved in miero processor technology and have

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For further information on any of the above vacancies please contact the appropriate consultant. If your qualifications do not match the above positions but you are seeking other opportunities please contact us anyway.

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There is a possibility of School accommodation which is offered at low rent. School assistance will also be offered it alternative accommodation is required. Intrafrelocation expenses will also be met

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Your responsibilities will include proprietary systems language development compiler development, code generation for new micro processors and application of ource optimization techniques. BS or MS in Computer Science or related field with relevant course work and/or experience. Knowledge of block structured language and machine level programming, preferable for 8080 or other nucre processor is a

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If you have experience in ASSEMBLER or microcode or communications for at least 1 ½ years their a whole exciting field is open to you. We now have apportunities in SW, NW or W. Landon. Surrey apportunities in SW, NW or W. Landon. Surrey, Berks, and Hertfordshire for component people in this rewarding field. The future is definitely going to be with the MINI computer professional Telephone for details. CW27/2 Michael.

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. . . is a large distribution organisation based in BIRMINGHAM and currently enjoying an excellent reputation as a market leader in its field.

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... is for a Programmer with COBOL experience to work within a friendly

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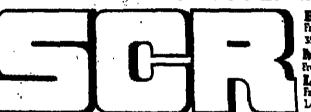
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annum, under review, Application forms and further particulars may be obtained from the Registrar. The University, Laicester LE1 7RH, to whom completed applications should be returned as soon as possible and not later than 24 July, 1978, quoting relatence SACW,

# Senior

Senior JCI, Clerk is required in the IBM 370, 158 installation at the American Express Card Division Operating Centre in

Suitable applicants must have a detailed understanding of ICL as applied to the IBM OS VSI System together with a good understanding of IBM withthes and be able to set-up and check JCL. The person appointed must have the ability to resolve problem situations quickly and accurately. All applicants will have at least three years D.P. experience and must be prepared to work

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\* IBM background and SUPERVISORY experience would be a distinct advan-

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Applicants should either:

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The successful candidate will become a member of the technical software team and

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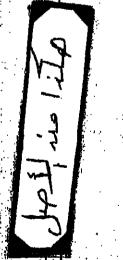
We hope we have said enough about American Express and the opportunities to interest you. We would like to meet you guickly. Therefore, interviews will be arranged either in Brighton, in London or the provinces, whichever is most convenient. Please contact John Goldsmith either by telephone or by sending a brie history. You will not be asked to fill in a form until we have met you.

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To sell TPS – the leading software product for ICL munications systems. We are currently taking one order every three working days and need additional Sales Staff to respond to the tremendous demand for TPS and other Telecomputing quality software products. Computer experience and sales motivation are essential: experience of terminal systems and of software marketing are useful but not mandatory. ideally we would like to meet system designers and programmers who have either moved or wish

## Technical Writer

Responsible for writing, publishing and updating our systems and software publications for TPS online systems; i.e. manuals and bulletins covering systems design, programming, system creation and operating. We require an experienced computer technical writer or an experienced analyst/programmer with the writing skills and analyst/programmer with the writing skills and motivation to produce quality publications for our clients.

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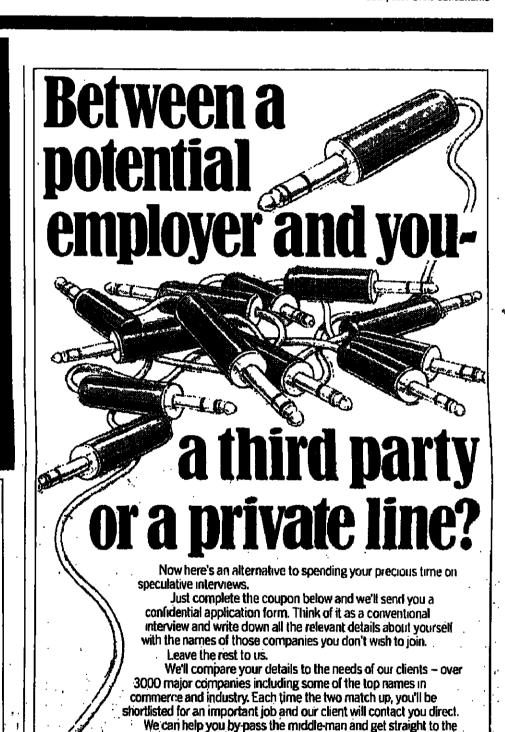
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or telephone 01~439 7871

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The successful candidate, male or female, will be expected to specify sultable hardware/ software systems, and will be involved in their implementation, development and future

implementation, development and future support.
Candidates should possess a good honours degree in an appropriate discipline. An in depth knowledge of PDP 11 hardware and assembler language is essential, together with experience of real time computing. A sound knowledge of Fortran is required and a knowledge of electronics would be an advantage.
The job is based at the Scientific Services Department, Rateliffe on Soar, which is in a pleasant rural location between Nottingham and Loughborough.
Salary on appointment will be within the range £3,570 · £7,050 dependent on experience plus self financing bonus.
Please apply in writing quoting vacancy number 12/78MR, giving details of aga, qualifications and experience, to the Personnel Manager, Central Electricity Generating Board, Haslucks Green Road, Shirley, Solihull, West Midlands B90 4PD.



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THE OPEN UNIVERSITY FACULTY OF MATHEMATICS

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The post will be based in Milton Keynes.

Candidates should have a first degree in a relevant field and a good working knowledge of at least one high-level computer programming language. The successful applicant will be encouraged to register for a higher degree.

The post is tenable for two years with an initial salary in the range £3.189-£4.601 per annum. Application forms and further particulars are available from

The Regrultment Office (MB3579/2), The Open University, P.O. Box 75, Walton Hall, Milton Keynes MK76AL, or by telephone from Milton Keynes 83406, or there is a 24-hour snawering service on M.K. 63868. Closing date for applications 25th July, 1978.

#### SYSTEMS ANALYST/ PROGRAMMER AP5/SO1 £4,525-£6,245 Incl.

This post offers a challenging and rewarding opportunity to participate in the development of the full potential of an ICL 2903 computer. Applicants should have some experience of systems analysis as well as

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Computer Systems

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Successful applicants will have 3.4 years osponence assembler proportioning on influentiations will good be leading of system software on any of the following Page

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## Abetter environment for Analyst/Programmers to £6,500

Physical environment alone makes this job unusually attractive, Our Client's small, elegant offices are located in the heart of the Thames Valley countryside, among some of the most beautiful scenery in England.

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If you're interested please phone James
Plummer on 01-491 4706, or write to him at:



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Zeus-



AN INVITATION TO TALK TO US IN OUR OWN OFFICES AT 2-10 CAPPER STREET, LONDON WC1 on THURSDAY / FRIDAY, 13 / 14 JULY BETWEEN 12 NOON AND 8.30 P.M.

Zeus-Hermes is a leading Software House and Consultancy which has specialised in Real-Time Software and Mini-Computer Systems since 1969. Now in 1978 one-third of our staff are engaged on MICROPROCESSOR projects. We are still continuing our planned expansion and require people who are keen to succeed in the areas in which we specialise.

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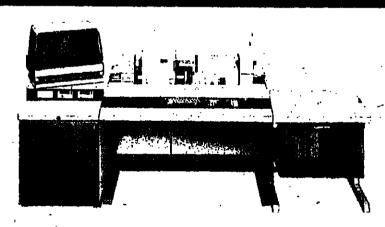
Candidates should have substantial experience in Assembly code or Machine code and preferably also in the development of Software. Specific experience in Minicomputers such as PDP 11, NOVA or Interdata, or micro-processors such as Intel 8080 or Motorola would be of great interest as would knowledge and experience of: COMMUNICATIONS SOFTWARE, TERMINAL EMULATORS, COMPUTERISED TELEPHONY, MESSAGE SWITCHING, HARDWARE DIAG-NOSTICS, WORD PROCESSING and TYPESETTING.

We would be particulary interested to talk to any people with PDP 11 experience under a real-time operating system.

These positions offer the opportunity to work on original systems from the design phase on, with a dynamic organisation whose professional and reponsible attitudes, together with imaginative forward planning, have created a highly successful company. Work is in Greater London and the Home. Counties, and opportunities frequently occur in Holland and Belgium which additionally offer generous overseas allowances.

If you cannot get in on these days, or if you would like further information in advance of 13 July, do telephone Charlie Ebbutt or Maureen Chapman (01-323 0637); or write to us.

\*Capper Street runs eastwards off Tottenham Court Road between Goodge Street and Warren Street stations.



# **Senior Analyst Programmers**

#### London (Brentford and Croydon) Birmingham, Leeds.

women with experience in data

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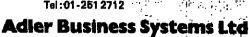
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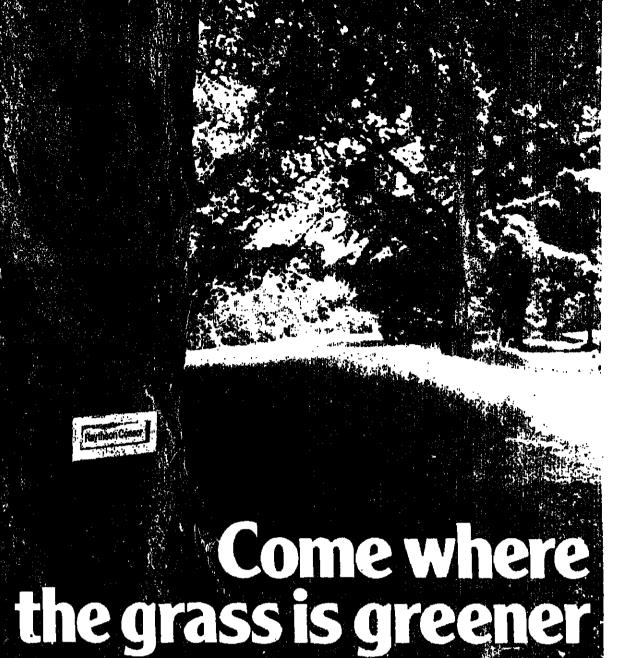
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advancement into management. We promote from inside - most of our sales staff and managers started as If you're good we don't quibble over salary and we run a bonus system, that puts batwaen £1000 and £1500 a year extra

Write or telephone (reverse charges if ou're long distance). Interviews can be arranged locally if required.

Mirza H. Fur, UK Field Systems Managet Adler Business Systems Ltd. Jordan House, 47 Brunswick Pigce, London N1 BEG Tel:01-2512712





COMPUTER WEEKLY, July 6, 1978

Raytheon Cossor Data Systems is Europe's leading independent manufacturer of advanced terminal systems. Our programmable PTS 100 is widely use 1 widely respected and very successful. Our future products, including microprocessor based systems, will maintain the lead we have established in the UK and mainland Europe

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Analysts will have at least four years relevant experience, preferable with recent responsibility for the work of other staff Programmers will have one to three years

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The best products demand the best possible technical support. We need Senior Software Specialists for pre- and post- sales support to users and to our own sales and project teams. Candidate: will have rare qualities: the ability to learn our product software totally, to troubleshoot in a wide variety of client environments, to advise creatively on proposed systems and products. They must be energetic and mobile. Ideally, candidates will have worked in technical support with a minicomputer manufacturer. Rewards and prospects will be excellent.

The chances are that Raytheon Cossor Data Systems can offer you the next step in your career that you'd hoped for but perhaps thought you wouldn't find. And the work prospects apart you'll enjoy our intelligent location. If you already live within easy reach of Harlow you'll welcome the lack of . commuting. If not, housing in Essex still represents excellent value and we will give assistance with relocation,

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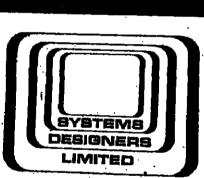
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The Gateway Building Society with assets over £550m is one of the

An Analyst/Programmer is required for the main offices in Worthing,

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CONTACT: Sheila Bradbury for the Manchester position on 061-833 0676. CONTACT: Valerie Hall for the Kent position on 01-935 0671.

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COMPUTER SYSTEMS ENGINEER

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offering successful candidates the opportunity to enhance their careers in this area. Programmers, with a minimum of 18 months' COBOL, will gain analysis experience and close user contact, particularly at system implementation time. Career prospects are excellent as full traning will be given where appropriate.

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The Opportunity

Our client has thought carefully about this. They realise that it is difficult to offer career development in the technical support area in a user environment. However, as a large international financial organisation, they now feel that they are able to offer a genuine and interesting career opportunity for someone who has worked in a technical support role, either as a Systems Programmer or as a Senior Programmer.

Middleware is being developed to interface CICS with on-line applications. Our client wishes to continue the development of this middleware to cover real time options.

About You

They want to meet someone who really understands CICS and can integrate applications development with CICS. In this case, for systems such as a real time Foreign Exchange Dealer System. There is no doubt that to enable you to work effectively you would have to learn about applications systems which makes the job that much more demanding. A knowledge of VSAM and DOS/VS would certainly be an advantage and someone who is working in a teleprocessing environment will find the challenge offered very substantial,

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Our client is looking for someone who feels that their technical background is being frustrated by the lack of career planning with their current employer. They realise that the development of technical skills is just as important as moving into line management. The salary offered is circa £6,000. In addition to that there is a bonus of up to 6% of basic salary during the first two years. After that time it can be as high as 15%. There is also a low interest mortgage scheme, currently 8%, plus other significant benefits which include subsidised lunch and interest free season ticket loans.

The Prospects

'Benefits alone are not sufficient to attract the right person and our client has given serious thought to career opportunities. These may be running their Technical Support Group, or moving into applications development at a later date. Our client is large enough to enable either of these possibilities to be realised.

If you are interested and would like to know more about the position please contact John Goldsmith at Goldsmith Recruitment International Ltd. Ref. 1769.

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## **Systems** Programmer

## Bahrain: c. £12,000 Tax Free

Aluminium Bahrain is one of the leading industrial organisations in Bahrain and the Gulf. In addition to the main production plants, this trantain and the Guit. In addition to the main production plants, this 120,000 tonne/yr, producer of primary aluminium has its own infrastructure which includes power generation and distribution, marine facilities, and water distillation. There are more than 2500 employees.

This new appointment is crucial to the development of the company's computer facilities. The computer is an IBM370/115 using DOS/VS and POWER/VS. A number of functions are already computerised, another eight are under development and it is proposed to progress the installation towards that base and on-line systems. Reporting to the Hend of Computer Services, the Systems Programmer will play a key role in this development.

Fig. will also be responsible for manufacturers, and in-house developed software, and will undertake the design through to implementation of any

Applicants must be high-calibre systems professionals with specific experience of IBM software, programming techniques. Assembler language and data base operations. Membership of the BCS, a degree or the equivalent would be preferred.

Salary will be negotiable around the figure given above and will be dependent upon experience and qualification. At the present time there is no income last it Bahrsin and money is freely transferable. Benefits include rent-free air-conditioned housing, 40 days home leave per year, free provident fund:

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Applicants should have an Honours Degree preferably in Computer Science, and also programming experience in both a high-level language and assembler.

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Further particulars may be obtained from The Secretary University of Bristol, Senate House, Bristol BSB 1TH, to whom applications should be sent by 28th July, 1978.

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Working with the senior systems analyst you'll be writing, and implementing various systems, including software. Because systems are prepared for all three UK Tarrangton plants, this will mean close liaison with users in other locations.

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If you're looking to get on in-computers, it will pay you to talk to Torrington

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Great Importance is placed upon the ability to develop function middle to aid in corporate decision making, and idealty candidates will have experience of using ICL's PROSPER package.

Initially the team will conset of the Project Leader and one systems Analyst with programmers boing allocated as sind when the need arises.

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to £7.500

New IBM 3032; CICS/VS; VTAM; VSAM. Extensive terminal network being developed

An organisation serving almost 2 million customers is taking delivery of an IBM 3032 in August to augment its existing 370 equipment. There is an emphasis on the development of on-line systems and it is planned to have over 500 terminals by 1979. The present software environment includes VS1, CICS/VS, VTAM, VSAM and projects during the next 12 months unclude MVS, database, distributed processing, etc. The planned workload requires an additional Systems Programmer to join the team Essential experience is at least 3 years in systems programming, with experience in as many of the stated software fields as possible. This is a oxpariance in as many or the stated software fields as possible. This is a highly responsible position, and candidates must be well motivated and able to work with a minimum of supervision. Candidates should be of the calibra to progress to Senior Systems Programmer within two years. The conditions of service are excellent, with generous holidays, sickness scheme, pension, etc. Raf: 736/CW/Neville John

to £5,750

A Software Programmer is required by one of the U.K.'s leading IBM

A Software Programmer is required by one of the U.K.'s leading IBM service bureaux to join a small team at the start of a TP project, to develop software for a MEMOREX 1380 Intelligent Control Unit. On completion of this project the successful candidate will either move into the area of systems programming, or IBM software development. The person appointed will have a good technical background, ideally IBM. Experience of ASSEMBLER language would be preferred, although applications from candidates with Usercode, Plan, or any other low level language would be considered.

An allowance will be given for relocation purposes. Other benefits include

flexible working hours, a staff restaurant and a contributory pension

OICL SYSTEM

4 & 2900

**Programmers & T.P. Consultants** 

£4,000-£8,000

READING (Berks) — A number of vacancies exist with a Software House for young candidates with COBOL and/or USERCODE Programming experience on ICL SYSTEM 4. Consideration will also be given to

candidates with an IBM background who have been programming in COBOL and/or ASSEMBLER. The positions are based in Reading (Berks)

with an opportunity to work on customer's projects on site, in various parts of the U.K. Long term projects will involve retraining on other hardware such as large 2900 systems (£4,000-£4,500).

Ref: 524/CW/Rense Nute

Any low level language considered

scheme. Ref: 737/CW/Marian Tabone

40年的情報報告 **Real-time Programmers** 

Berks - Herts - West London

There are opportunities at the above locations for people with mini or micro computer experience to work for a computer manufacturer
Applicants should preferably be graduates with at least 2 years. Assemble: real-time programming experience which can be based on any mini computer. In addition any application experience would be useful particularly in the area of communications. We would also be interested to near from people with microprocessor experience

£4,000-£6,000

These vacancies exist for all levels of programmers to Project Leaders Salaries in excess of the figures quoted could be negotiated for exceptionally well qualified applicants. There are also openings for recently qualified graduates with degrees in Computing science who wish to train as programmers Ref: 114/CW/Sandy Lloyd

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## **Senior Systems Analysts**

to £8,000

European network, IBM 370's and PDP 11's

A major manufacturer of industrial chemical products has a Europe-wide network of PDP 11740s and medium sized IBM 370s operating in a distributed processing environment. Serior Analysts are urgently required for the London installation to develop and implement business systems for the six main manufacturing locations in Europe. Applications will cover accounting, marketing and other commorcial systems. Successful candidates will have at least four years good systems experience. A graduate would be preferred. Although the positions will be based in London, there will be a certain amount of European travel involved. The ability to converse in a European language would be an obvious

A relocation package will be offered. Other benefits include flexible working hours, a staff restaurant, four weeks holiday and a contributory pension scheme. Ref: 738/CW/Marian Tabone

O MARLOW O SALES & Software Programmer TECHNICAL SUPPORT

**London - Sales Support** to £6,000

**Reading - Technical Support** £3,300-£5,500

Our clients are looking for experienced junior project managers and sales support staff to be responsible for providing system implementation support and specific pre-sales support for a number of large manufacturing export and specific pressess support for a number of large manufacturing customers. The positions are London based and call for specific knowledge (both hardware and software) of one or more of the 1900, 2903, 2900 DME ranges.

Ref: 522/CW/Renee Nute

Technical support positions based in Reading (Berks) are open to experienced personnel with a background in operating and/or Systems or Programming on ICL 1900, 2903 or 2900 ranges.

Ref: 523/CW/Renee Nute

## **Engineers**London - Liverpool - Manchester Sheffield - Hemel Hempstead

c £4,000 + Car + OT

A number of opportunities exist for experienced customer service engineors to work for computer manufacturers. They will be based at the above locations and will travel to customer sites within a reasonable

A number of vacancies also exist for 2900 experienced programmers to work on conversion packages. The positions are Reading based.

Ref: 525/CW/Renee Nute Candidates must have an HNC or HND or degree in Electronic Engineering or a related area. In addition 3-5 years experience working on any mainframes and peripherals would be desirable however product training LONDON — we are also looking for Senior professionals with a first class T.P. ASSEMBLER background and/or software experience on large ICL 2900 systems. The ideal person will probably have worked on one of the following Large scale Teleprocessing, Linking processor to mainframe, Real Time operations Systems. (to £8,000).

Ref: 526/CW/Renee Nute

Other vacancies exist to work in other locations. In some instances production, design, development and commissioning experience would be useful together with a good background in electronics.

Ref: 113/CW/Sandy Lloyd

© GERMANY to c £14,000

Our Client, a European based consultancy organisation currently wishes to recruit a number of personnal for projects based in various German focations. Positions will be offered on a 1 or 2 year renegotiable contract basis, some of which may offer opportunities for tax free earnings during the contract period. Knowledge of the German language is useful but not

**Basic Software** 

Located in Southern Germany, Software Designers and Programmers are required to develop, implement and test Basic and Applications software for a new range of mini and mainframe hardware which is to be used on a worldwide basis for process control and real time commorcial and technical applications. Basic software experience could include operating systems, compilers, database communications, macro libraries, etc. Programming experience in a low level language or Algol is desirable.

Ref: 351GA/CW/Roger Allington

Ideal start would be Septembar 1978. Experience using PDP 11 hardware is essential preferably under RSX11D/M or RT11, using Fortran or Macro 11. Applications are mainly on-line and real time commercial systems. Ref: 351GB/CW/Roger Allington

Analyst Programmers with Olivetti TC800 experience are required to develop, from design through to implementation, commercially oriented applications involving on-line and real time processing Ref: 351GC/CW/Roger Allfngton.

German. Ref: 361A/CW/Roger Allington

Univac 1108 ical applications being developed in Southern

Commercial projects in Holland and Germany require PL1/Cobol experience. OL1 and systems generation experience would be useful. Ref. 361B/CW/Roger Allington



To apply for any of the above positions or for further information, please telephone the Consultant concered on 01-242 9358 (office hours) or write to the above address. If it would be more convenient to telephone in the evenings, the telephone numbers are: Neville John — Famborough (Kent) (66) 52017, Roger Allington — Berkhemsted (04427) 2299. Renee Nute — 02-874 6372. Sendy Lloyd — 01-691 5168. Marion Tabone — 01-655 5568.



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ir Computer Operations Department lich is tunning an IBM 370-138 inder DOS/VS POWER and CICS ned of commuting in the rush hour? How about joining us? We rice of curringing in the restriction is they along partial feave, provide final time working bours, over five weeks annual feave, a subsidesed restaurant and free car parking facilities at Catford. porence professed, probably gamed a similar system 38 hour work : days holiday, subsidised reflection and iconsed sports and local club Phone Nigel Trott on 827 8464 Ex 876 for further information.

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Application form, returnable by July 21st, and detailed job description from Chief Personnel Officer, Town Hall, Catford, London SE6 4RU or telephone 01-890 7866 (24 bour Ansafone service) quoting appropriate reference and

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The Council operates an IBM 370/138 computer with a substantial remote terminal network which provides a service to both County Departments and District Councils. Major enhancements to both hardware and software are planned. The emphasis of the new development is on interactive management information systems, and these posts will play a key role. Salop has plenty of cheap housing in predominantly rural surroundings, and generous assistance with removal expenses will be given in approved cases.

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Application forms and further details may be obtained from the County Treasurer. Shirehall. Shrowabury: Salop SY2 6ND (tolephone Shrewshury 222235). returnable by 19th July, 1978.



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The Council will shortly take delivery of a Honeywell 64 / 20 and conversion of existing systems from Sories 200 is now under way. The new equipment will enable further systems to be developed and communications facilities to be

his post attracts 100% ramoval expenses, generous ssistance with resettlement expenses and temporary

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If you are interested please write with brief careor details to Geoff Marchall Software Support and Development Manager

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(pay award pending)

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parages. The Council operate an ICL 1901A
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Central Electricity, Generating Board, North Eastern Region. Beckwith Knowle, Otley Road, Harrogate HG3 IPS, quoting reference SVN/514/ . . Applications should arrive not later than Friday 21 July, 1978.

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The project is concerned with the
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Salary within scale 63189-64130 (under review). Further details and application forms from Professor R. Bell, Department of Engineering

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00000000 **PROGRAMMERS** 

UK & OVERSEAS 01 996 3883 REEPOSTILONDON W4 3BR

DEPUTY DIRECTOR PROGRAMMER

perts, The Dahverstry compediat parvits in beand on a DEG 468B system, how POPTIC a CTL Modelar fina and ICA, 7005 Behad his line Berth West Materryllin Computer Hethorit: The Centra has cogniderable commitments in hold system and applications in adverting, and by the development of computing inclines her the new metabon.

Belary Schlau Dopply Blacker: Grade Hi, C7.074-E8,730 pm Statems Programmer: Grade IA/E: £2,660-£7,364 For Sussem jetisciency her at £6,17() Application forms and further particulars from the Augstrac. The University, Keels: Significa-sites 815 588. Closing Date 12th August. 1978.

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(Mrs. Tilley) Closing date 18th July 1978

# Informatix UK & O'seas Index



POSITION	SALARY	EMPLOYER	LOCATION	HARDWARE ENVIRONMENT	SOME OF THE QUALIFICATIONS	REF. NO.
Analysis	to £7.500 + Free lunches + Stores Discount	Retall Trade	Landon	IBM DOS	Analysis with the potential to be project managers are required to lead a team of analysis and programmers to develop data base and P.O.S. projects.	21/1
Soltware Technical Instructors	to c E7,000 + car allow + +	Manulacturer	NW Landon	-	1 — years' computer educational instructing and course development work or equivalent experience. Working knowledge APGII and all applications software at functional capability level.	27/2
Systems Analyst	c £8.000 + mortgage + bonus + free tunches	(psurance	EC2	ICL 1900	Urgently required — analysts with 2 years + experience to work on financial/insurance systems in an on-lies environment.	27/3
Sanior Analysi/ Project Manager	£12,000++ TAX FREE ACCOM ++	international Airline	Middle East	IBM DOS VS POWER	Extensive experience of airline achedule planning. Previous experience of operational research is essential and statistical background of distinct advantage.	27/5
Technical Analyst, Programmer	ta £7,500 +	Seftware House	Landon	Minis/Micros	Excellent opportunity for programmer/analysis with 4 years + experience of assembler/machine code to develop software products on a variety of machines.	27/6
Software/ Package Specialists	to £7,000 +	Вигеач	WI	PDP 10	Excellent career prospects for people with experience in one of the following areas: PDP8/11s. networks, message awitching, communications, etc.	27/1
Consultant	A1 NEG.	Electronics Industry	Amaterdam .	_	This European marketing HO requires a CAD/CAM specialist giving sales support in Europe. Experienced in numeric control of machine tools. Free to travel.	27/8
Analysts & Programmers	to £7,500 + fringe benefits	international Banking	City	IBM & Minis	Exciting career prespects for DP professionals with a minimum of 18 months COBOL/RPGII experience to develop on-line, rest time, banking applications.	27/9
PL1/COBOL Programmers/ Analysts	to £6,500	Buresu	N. London	IBM 08	PL1/COBOL programmers argently required to join this expanding organisation to work on a wide variety of projects using data base and terminals.	27/10
Programmers	to £7.000	Electronics Industry	N. Surray	Any	First-class opportunities for all levels of programmers to work on advanced software/hardware systems in a chellenging and rewarding role.	27/11
Programmers/ Analysts	to £6,000	Software Services	City	· PDPII ·	Programmers with a sound background preferably on PDP equipment required to develop interesting real-time and communications systems.	27/12
Programmer/ Analysts	to £6,50B	Building Industry	WC1	ICL 1900	Programmers with 3 years ICL COBOL and preferably some systems experience urgently required to develop on-line commercial systems.	27/13
Analyst/ Programmers	10 £6.00Ď	insurance	NE Surray	IBM: DOS	Openings for self-starters with a minimum of 18 months' COBOL. Excellent career prospects within this progressive organisation.	27/14
Programmers & Analysts	to £7,000+	Saftware House	Contral London	Burroughs	Excellent apportunities for programmers with 18 months + COBOL experience to work on a wide veriety of commercial projects.	27/15
Contract Programmers	from £180 par week +	Software House	Lendon H. Counties Brussels	Yaries	PÜP Basic + . RPOII. IBM COBOL. OS. MARK IV. 1900 GH COBOL. Burroughs B80, PL1. OS. Contracts available now.	
Scientific/ Technical Progremmers	to £7,090	Technical Consultancy	Various S. of Edgian	Minis/Micros id	Scientific/lechnical programmers with minimum 2 years' assembler and preferably ALBOL. CORAL, FORTRAM, preently required to work on a wide variety of projects including process control, almulation, communications. Exection person prespects.	

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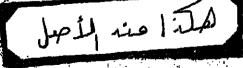


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phone operator SALESMEN will often hear than anyone else, including the old selling adage, "start the MD. So, not only at the at the top," but, despite this beginning of the sales heartfelt plea, will more negotiation, but also at often than not commence many subsequent stages. their selling cycle at what-ever level fate inflicts upon be the salesman's greatest

In practice, it is certainly An essential fact to bear best for a salesman to start in mind is that telephone his selling at the chief operators, secretaries, etc. executive level wherever do not generally provide possible, but it is generally helpful information as a idvantageous for the very result of being "chattedfirst contact to be at a much up." I have seen many sa-lower level in the hierarchilesmen at work in this rescal league table, namely the telephone operator.

pect and most efforts have been pathetic. For every The Importance of being Sean Connery employed in well prepared before every selling within the computer stage of the sales cycle has industry, there are probably been emphasised in this 50 Woody Allens! Like most column many times, and aspects of selling, there is preparation for the first only one reliable approach contact is probably the and that is based on truth

most crucial event of all, and common sense. The salesman can collect a vast array of company in request for assistance. "I formation from Dunn and wonder if you can help me Bradstreet, Kompass and please? I believe you are the The Stock Exchange person most likely to be able Yearbook, but they have to provide the assistance little to contribute when the need" -- or words to that salesman needs answers to effect.

cial director?" or "What is names, locations, products and habits of all kinds, a salesman's best friend is his prospect's telephone opera-

her about the company's current involvement with computers — she will almost certainly have some idea of the situation.

In most organisations, the person who has the nteraction with the largest number of people is the writing a letter to you telephone operator. Very managing director and loften she also has contact wondered if you could .... with the secretaries of senfor executives, so she tends pany before but I've forgotto know more about what is . happening within the com-

People like to help. It is a compliment to be asked. questions like "Which is the best day to catch the finan-Just think how you react the name of the new when people ask you for managing director?" assistance. It is an ego boost When it comes to infortowhich most people res mation on organisation, pond altruistically. "I need chivalry - maidens and dragons and things.
The second phase is

where most salesmen get i If the salesman wants to be sure he gets the MD's name and initials right, as well as the company name need. If someone is going to and address, just ask the help you they are best fitted telephone operator. She will to do so if they know also tell you the best times exactly what you need and to catch him, as well as the why you want it. It really is names of his closest aides, an acceptable approach to and if you are really char- ask "Can you give me the ming she might even give name of your managing you an outline of the com- director please, I want to pany's primary products sell him a computer. Do you and markets. Be sure to ask know if you already have one? Do you have any idea what it is used for, what make it is and who is in charge of it?"

The direct and truthful approach will tend to generate much more information than contrived approaches such as "I am weather like at your end?"

TRADER

A RANGE of vacuum column with an integral Zilog Z80 microprocessor which controls duced by Calcomp as the 900X power switching to various

### Puzzler

THE sheer width of the problem is in fact somewhat artificial, since SEVENTY has been tacked on merely to create a tenth letter (Y) so as to accommodate all ten digits in the classic tradition. So the task boils down to solving the smaller sum THREE + TWO + ONE = SEVEN. The basic solution is

310172529811 + 264 + 471# 471, = 310172531017: Two alternative possibilities for the N-O pair mean that this answer is not, however,

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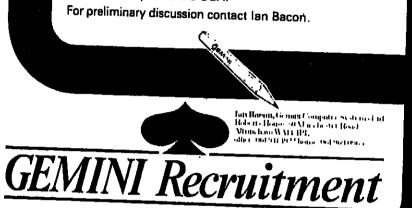
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University of Essex DEC system-10

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"Well, they've confined him to some menial job maintaining old Cobol programs, I believe — that's why he

"Great! Do you think they would agree to join us?"
"I'm sure I can persuade Lambda and I have a feeling that

if she comes so will he."

if she comes so will he."

"That's settled then," declared Hex with an air of finality.
"we set off for San Guine tomorrow night."

"No. Let's go right away. This place gives me the creeps."

Hex peered out through a crack in the awning. It was already growing light. "What? Travel in broad daylight? You must be insane."

"We're on the run, aren't we? So we have to keep

"Yes, but I could use the day to get Asen really shipshape again. And I want some time to check out the microprocessor which Null gave me. It may have some very valuable information stored in it."

"We don't have time. If we just he back and take it easy they'll catch up with us. We're only a day's march away

"It's all very well for you, but my alpha ratio is approaching 0.9. The critical loading is 0.95 and if it goes above 0.96 my brain will seize up 1 wasn't designed for this sort of existence: I'll have to implement some forgetting

"Huh," expostulated Cleo scornfully, "I thought you mechanical men were so superior. I'm glad I never got

Stung by this taunt. Hex was about to make an insulting remark about her place in the evolutionary scale when he checked the impulse, realising that they could not afford anger. "Look," he compromised, "I'll just do the very minimum to get Ascii fixed up again and offload some of my temporary files. Then we'll go, even if it's still light."

Cleo agreed without further ado, and he set to work on his bloose dog.

his bionic dog.

One by one, Hex went through the diagnostic routines, while Cleo watched over his shoulder. When he was finally satisfied that every circuit board was functioning correctly he rolled Ascii outside and asked Cleo to stand clear. He began the cold-start procedure by switching on the power supply and pressing the reload button.

Ascii cocked one ear, sniffed the air and went bounding down towards the pond, where some birds had gethered to wash themselves. With a great squawking the whole flock took to the air and flew off. Ascil stood under the monkey-puzzle tree barking up at a pair which had taken refuge in its branches.

"He looks all right," said Hex. "Now I'll just do a quick file purge and then we'll be ready to go."

Soon they were clambering up the steep tunnel. With a little help from Ascii, pushing at the rear, they emerged at length from their secret resting place, somewhat breathless and very muddy. It was still early morning.

After they had been walking down the hill for a while in silence Cleo asked, apropos of nothing, "What's Simula libe?"

"Simula. What's she like?"

Hex was caught off balance. "Well," he began, "she's a block-structured high-level general-purpose compiler producing relocatable object code . . ."

"No. I mean what does she look like?"

"She has blue eyes and blonde hair. She's Scandinavian. Why? It means nothing to you. Why are you so curious?" "You kept calling her name in your sleep, that's all. It

"Let's talk about something else." Have we heard the last of Simula? Don't bet on it.

· 1978, Richard Forsyth, RAIR Timesharing.

## **BOOKS**

"Freczing."

# 'Go out and buy it—today'

too far from here. Why don't we go and get her?"
"We really want and olds, who know their way around

"She is an android," was Cleo's indignant reply. "So is her boyfriend, Zap: he's supposed to be a machine-code wizard.

But he's always getting into trouble."
"Zap? You don't mean Zap Zapper, the logic bomber?"
"I think that's his name."

Hex was truly impressed. "You're talking about the Zap

Zapper, telecommunications freak and programmer ex-

traordinary — the one who wrote 'Schizophrenia divides and rules OK, on the central master accounts file. We could certainly do with someone like that. He's a legend in his own time. I'm surprised he's still at large."

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